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EMERGENCY GASTRECTOMY FOR ACUTE GASTRODUODENAL PERFORATION *

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In recent years, there has been much interest in the use of gastrectomy as an emergency procedure for acute gastroduodenal perforation. This interest was stimulated by the results of long term follow-up reports which showed that simple closure of a perforation was frequently followed by medical intractability or subsequent definitive surgery.

The primary responsibility of a surgeon who treats a patient with an acute perforated ulcer is to save his life. Therefore, the later behavior of the ulcer, while important, is a secondary matter. If, however, both objectives may be managed safely in selective cases by one procedure, further investigation of it is indicated.

The use of nonsurgical treatment for this catastrophe is thought by most physicians to be too hazardous, and is usually reserved for two groups of patients. First, those patients whose general condition is so poor as to preclude any type of operative procedure, and second, those patients whose perforation has occurred a sufficient length of time prior to any treatment so there is no doubt that the lesion has been sealed off.

In the emergency treatment of this condition, therefore, an operative procedure is almost always indicated. A curious geographic diversity of opinion has developed in respect to the procedure used. In 1902, Keetly [1] performed the first partial gastrectomy for this catastrophe, and in 1919, Von Haberer [2] recommended that all perforated peptic ulcers be treated in this manner. The plan became popular on the European continent and by 1939,[3] Yudine from Moscow reported 937 resections for this cause with only 84 deaths or a mortality of 8.9 per cent. During the same period, he treated 435 ruptured peptic ulcers by simple closure with 138 deaths or a 31.7 per cent mortality. This is an extraordinary record for the period of this report, but, of course, the relative case fatality rates should be cautiously interpreted as the very ill patients were obviously submitted to closure rather than resection.

There is now renewed interest in gastrectomy for this condition in Britain and the Scandinavian countries. This year, Pierandozzi,[4] et al, reported their results with vagotomy and pyloroplasty for perforated duodenal ulcer.

Until recently Strauss [5] and Bisgard [6] have been the chief American champions for gastrectomy as an emergency treatment in selected cases. There are now reported series of cases from many other sections of the country, i.e. from Houston,[7] Seattle,[8] New York,[9] and from New Orleans.[10]

END RESULTS OF SIMPLE CLOSURE

Formerly, there was a rather strong

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belief that most patients did very well after simple closure of a perforation. Guthrie and Sharer [11] felt that perforation might actually destroy an ulcer, just as if a cautery had been used. Many observers felt that a person who suffered this accident had had an impressive warning and, therefore, would obey instructions in the future.

As the number of long term follow-up studies increased, however, it became remarkably clear that the results of simple closure were far from good. A summary of recent follow-up studies [12] (Table 1)

TABLE 1
FOLLOW UP AFTER CLOSURE

Author	No. of Cases	Recurrences	Further Surgery
Turner (1951)	147	75%	38%
Woordiak (1953)	826	60%	35%
Bierring (1953)	191	61%	37%
Troell (1954)	70	70%	50%

Quoted from Bisgard [12]

shows that there has been a definite, fairly severe, recurrence rate of about 70 per cent. In addition about 40 per cent of patients required further definitive surgery.

More specifically, Scholnick and Hastings,[13] reporting on their follow-up patients treated by simple closure, had 107 patients who were advised to follow medical treatment when they left the hospital and were followed for a minimum of five years. (Table 2). Impressive are the few asymptomatic cases, (16 per cent), and the large number requiring continued medical treatment or operation.

TABLE 2
RESULTS OF MEDICAL THERAPY—107 PATIENTS

	Patients	Per Cent
1. Response to Medical Rx	54	
A. Asymptomatic	17	16.0
B. Mild-Moderate Distress	30	28.0
C. Died of other Disease	7	7.0
2. Failure on Medical Rx	53	
A. Intractable Pain	6	5.6
B. Ulcer Surgery	44	41.0
C. Died of Ulcer	3	2.8

From Scholnick and Hastings: [13] Perforated benign ulcer. West. J. Surg. Obst. & Gynec. 65:136 (May-June) 1957.

In a current study of cases of perforated peptic ulcer since 1950 on all services at Charity Hospital of Louisiana in New Orleans, Lawrence [14] has thus far collected 146 cases of simple closure with 6 deaths. In the follow-up studies on these patients, which is admittedly brief, and in which 35 patients never returned to the hospital following discharge, there were 26 cases who required subsequent definitive surgery.

JUSTIFICATION FOR GASTRECTOMY

In his collected series of 16,752 cases of perforated peptic ulcer reported in 1940, DeBakey [15] reported a mortality rate of about 25 per cent. Most of these cases were treated by simple closure. In 211 cases, which he analyzed from Charity Hospital of Louisiana in New Orleans, the mortality rate was 19 per cent. Since 1950, at the same institution, Lawrence [14] has thus far found 189 cases of perforated ulcer with 12 deaths—5 without treatment —or a mortality rate of about 6.3 per cent. The recent reduction in mortality is undoubtedly due, for the most part, to the excellent adjunct methods employed today which were not available previously. The average mortality rate for the management of perforated peptic ulcers treated by simple closure is about 10 per cent. A collection of 565 cases [10] in the past several years treated by gastrectomy, revealed only 21 deaths or a mortality of little over 2 per cent. This is slightly lower than the case fatality rate for gastrectomy for chronic peptic ulcer in most clinics. In the consideration of these statistics, however, it must be emphasized that the patients submitted to gastrectomy are only those who are felt to be good risks.

In spite of the reported safety in performing gastrectomy for this condition in selected cases, the mortality would certainly be increased considerably if this method was undertaken by inexperienced surgeons. If performed as a routine matter whenever the only method of selection is the ability of the patient to withstand the procedure, then there would be a con-

siderable number of unnecessary gastrectomies. This would amount to the 30 per cent of patients who could be managed without much difficulty on medical treatment. In addition, these patients would be subjected to the possible complications of gastric resection—a statistically small, but an important number. Obviously then, a method of treatment that is admittedly radical and which may have serious sequelae must be hedged around with restrictions.

The primary restriction should be the general condition of the patient to safely withstand the procedure. Next, the procedure should be limited to experienced gastric surgeons, or to properly trained and supervised residents, with good hospital facilities, and the availability of a skilled anesthetist.

When these general conditions are met, there are some surgeons who believe that once an ulcer has demonstrated such a degree of virulence as to proceed to acute perforation, it is already in the category of lesions which should have a resection. This mode of therapy results in some patients submitted to resections unnecessarily. In an attempt to restrict this to the smallest possible number of patients, I am of the opinion that there are some other factors which should aid in the selection of patients for resection. These factors would be those which influencd the prognosis after perforation and must logically be made from follow-up studies. They include the patient's social and economic status, the presence or absence of a previous ulcer history, the acuteness or chronicity of the lesion, the age of the patient, and the time interval between perforation and operation.

From a practical standpoint, the factors listed which proved to be important prognostically are primarily two: (1) the presence or absence of previous ulcer history, and the acuteness or chronicity of the lesion which actually blend together, and (2) the age of the patient at the time of perforation.

PREVIOUS ULCER HISTORY AND CHRONICITY OF LESION

Most recorded series state that the longer the duration of ulcer symptoms before perforation, the more likely is there to be a recurrence afterwards. About 80 to 90 per cent of patients who perforate an ulcer have some previous symptoms.[13] Luer,[16] Scholnick and Hastings,[13] Illingworth, et al,[17] and Troell,[18] all present good evidence to show that those who perforate without any previous symptoms tend to have a fairly good prognosis. Conversely, those with long or severe previous ulcer symptoms, most often develop serious difficulty.

Gilmour [19] correlated clinical history before perforation and the pathologic findings at operation, and on this basis divided the cases into acute and chronic ulcers. In 116 cases in which symptoms were of short duration and duodenal scarring minimal, 62 had satisfactory results and 28 moderately satisfactory results. The remaining 26 had persistent symptoms or suffered relapses, and 11 required secondary surgery. In striking contrast, everyone of the 65 patients with chronic ulcers had unsatisfactory results, and 41 of the 65 patients required secondary surgery.

AGE OF PATIENT AT TIME OF PERFORATION

While the age of the patient naturally plays a role in the immediate mortality, the concern here is with its importance regarding prognosis. In the studies by both Illingworth,[17] et al, and Luer,[16] the younger patients had a definitely higher incidence of recurrence than those over 50 years of age. The reasons for this may be related to the higher incidence of hypochlorhydria in the aged, and the fact that the younger patients have a longer time to be subjected to their ulcer diathesis.

ANALYSIS OF CASES

In January of 1953, a deliberate change in the policy of management of acute gastroduodenal perforation was made by the surgical service of Tulane University School of Medicine at Charity Hospital of Louisiana in New Orleans. This change

consisted in the performance of immediate subtotal gastrectomy instead of simple closure in all suitable cases. As will be emphasized later, only the very good risk patients were submitted to gastrectomy; whereas, the more critically ill were treated by simple closure.

From January, 1953, through May, 1957, there were 96 patients on the Tulane Surgical service treated by surgical measures. Of these, 46 had simple closure of their perforation with 6 deaths, a mortality rate of 13 per cent. The remaining 50 patients had subtotal gastrectomies with 1 death or a 2 per cent mortality rate. This 1 death resulted from a proved transfusion reaction in a 57 year old man, who had a perforated gastric ulcer.

While a time limit between perforation and operation was not definitely used in selecting the cases for gastrectomy, in the early phase of this report most of the cases were done within a period of eight to twelve hours after perforation. The longest time interval in this series was twenty-one hours. We no longer feel that this interval should play an important part in the selection of cases, except as it relates to the patient's general condition.

Most of the 46 cases submitted to simple closure were critically ill, and it is doubtful that many could have tolerated the more radical procedure. The relatively high mortality of 13 per cent for closure compared to 2 per cent for resection shows that they were well selected. Preoperative preparation always included nasogastric suction, the intravenous infusions of dextrose solution, and the administration of antibiotics. Transfusions were ordered or withheld on an individual status.

All of the 96 operations were performed by residents. The 50 gastrectomies were regarded as technically easy, as the associated edema often facilitated the dissection. However, in two instances, due to the reaction and scarring in the area, tube duodenostomy was necessary. The standard Billroth II technique was usually followed.

For the sake of completeness, it should be mentioned that one of the 46 patients treated by simple closure began to bleed shortly after operation and required emergency gastrectomy on the sixth postoperative day for control of hemorrhage. This case deserves special mention, because it emphasized the possibility of simultaneous acute peptic ulcers on the anterior and posterior wall of the duodenum. In our series of 50 gastrectomies, a definite additional posterior ulcer was noted in 7 cases. This was probably not searched for in all cases, but this incidence of at least 14 per cent multiple ulcers is recently becoming appreciated in the cases of perforation with hemorrhage. It is also indicative of the severe nature of their ulcerative disease.

DISCUSSION

It is generally agreed that patients who have acute gastroduodenal perforation are best treated by surgical means. This means that a major operative procedure must be undertaken. The operation of simple closure leaves the majority of patients facing severe recurrent disease and many, a future subsequent operation. It has been shown that subtotal gastrectomy can be performed safely under proper conditions, and that it will effect a cure of the disease in about 85 per cent of the cases. It remains, therefore, for us to have some criteria of selection.

There are, I believe, certain absolute indications for gastrectomy in acute perforations with which there should be little disagreement. These, I list as follows: (1) carcinoma of the stomach (delimited resectable lesions), (2) associated with recent or simultaneous gross hemorrhage, and (3) associated with fixed pyloric obstruction.

In addition, from the knowledge gained by follow-up studies, I believe the following are certainly justifiable indications: (1) recurrent perforations, and (2) patients with a definite previous ulcer history (preferably more than six months) and in the younger age groups (less than 50 years).

SUMMARY

The experience of treating selected cases of acute gastroduodenal perforation by gastric resection on the Tulane University surgical service at Charity Hospital of Louisiana in New Orleans is presented. There has been only 1 death in 50 cases so treated since January, 1953.

It is the opinion of the author that a more aggressive attitude than simple closure is necessary from follow-up studies, and, therefore, gastric resection is often indicated. The routine use of gastric resection seems unwarranted, but rather it is suggested that certain criteria based on the condition of the patient and his prognosis, be used to determine the appropriate treatment. This course of action should result in better end results than the routine use of either simple closure or gastrectomy.

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PINPOINTING PUBLIC HEALTH NEEDS IN LOUISIANA *

An Interim Report

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The correlation of socio-economic factors with the status of community health, particularly physical health, is a relationship that has long been known. Such studies have been made on an international scale by the League of Nations and the United Nations. They have also been made on a national scale in most countries, and on smaller scales in many states, provinces, and local areas. That a significant correlation exists between socio-economic factors and group or class health status needs no further proof. That the correlation is a causal relationship has been accepted as more than a hypothesis. It is not enough, however, that we have knowledge of broad interrelationships between health and socio-economic factors, for, unless we can pinpoint these relationships for use in practical application of hygiene programs, such knowledge remains academic to the public health worker. What, then, is the nature of a pinpointing program?

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THE PINPOINTING PROGRAM

During the past several decades, the

"balanced" program has been the slogan among the advanced guard of public health administrators. It has reached the stature almost of becoming a philosophy among those responsible for public health program building. This movement was indeed important in helping to develop the basic facilities and personnel in health departments, and in broadening the perspective of public health workers. Although few places in our country have attained the ideals predicated by the balanced program philosophy, local health departments, in general, have experienced phenomenal expansion of programs, personnel, and facilities as the result of this movement. Crude death rates, and specific mortality and morbidity rates for the most important death dealing communicable diseases of a half century ago have all been reduced to encouraging low levels. How much of these reductions have been caused by socio-economic and political factors is the province of further study. These decreases, however, have been general throughout the country, but they have not been uniform for all local health jurisdictions. In some areas, various mortality and morbidity rates are still high or moderately high, and in other places they have been greatly reduced, as is the case for maternal and infant mortality, tuberculosis, venereal diseases, typhoid fever, dysentery, diarrheas, hookworm and other intestinal parasitic diseases, pneumonia, and other diseases. Because of the uneven decline in specific mortality and morbidity rates, and the increase of formerly low rates for specific conditions, the time has come for a reappraisal of our "balanced" program activities to find out whether our programs are now really balanced.

In order that there be no misunderstanding of the meaning of the term, "balanced" program, let us consider its definition. For some who have given much thought to program building, the "balanced" program has had a dynamic meaning, connoting the continuous process of evaluating program activities in the stream of the interaction between social and biological phenomena, and in effecting program changes in accordance with the needs of changing conditions. By and large, however, in the popular sense of the term, perceived more or less statically, it has meant that for every unit of population there should be a certain number of health officers, nurses, sanitarians, etc., and that these workers devote certain aliquot portions of their activities to all the recognized categories of public health according to a generally accepted formulation which some professional authority or other had devised.

The latter concept of the "balanced" program came into being after the hectic period of dread disease epidemics which had forced public health programming to concentrate on water supply and waste disposal sanitation and immunization. With the lightening of our communicable disease burden, the wider scope of public health activities began to engage us. Emergency public health gave way to a broad program in which each category of public health was allocated a reasonably satisfactory portion of time in accordance with what was generally considered adequate.

Although the popularly developed "balanced" program had served effectively in raising the quantity and quality of public health personnel and the general standards in the operations of local health departments, it became apparent recently that some phases of the "balanced" program had been more effective than others, so that actually the "balanced" program became quite unbalanced. Thus, the desired even development in all phases of public health eventuated as an uneven development, the "weak" areas becoming pinpointed in contrast to the "strong" areas.

The unfolding of the "weak" areas has led to a reconsidered approach to program planning which may be designated as the "pinpointing" program. This consists in keeping an alert surveillance in those recognized essential categories of public health where the hazards to the

population have been greatly reduced, while at the same time concentrating efforts in those phases of work where progress has lagged or where new problems have arisen.

The "balanced" program, therefore, dynamically conceived, is a double-edged weapon of public health administration. While one point aims to attack health hazards in general, the other is aimed at bolstering the special weak spots in the defenses, i.e., pinpointing the attack.

The "pinpointing" approach is not a simple procedure. It involves special efforts in collecting, tabulating, and analyzing the statistical data of each locality, in organizing special studies of conditions where indicated, in mobilizing the official and nonofficial agencies into cooperation in solving special local problems, and in inducing flexibility and mobility into our programs so that the rigidity inherent in routinized programs may not become an obstacle to pinpointing activities.

The pinpointing concept in program planning is not new when examined historically. It is merely a new name for an old approach. It is an approach which forces itself into all social planning when the routine of the past needs to be reconsidered to meet the new conditions inherent in social change. The balanced program of yesterday cannot be acceptable as the balanced program of today or tomorrow. Pinpointing is the technique of reestablishing balance. Every administrator of a public health program must continually be aware of this process lest he lose contact with reality. We have reached a stage in public health programming at present where pinpointing is the order-of-the-day.

THE LOUISIANA SITUATION

Louisiana was among the first states in the Union which demonstrated the basic principle of Thomas Jefferson's political philosophy relating to health, namely, that public health was the province of each sovereign state. This was in 1855 with the establishment of the Louisiana State Board of Health. The trials of this Board resulting in U. S. Supreme Court decisions on the rights of a state board of health to protect the health of its people are well known to historians.[1] Louisiana was the classical battle ground in the United States where the legal aspects of public health relating to federal, state and local jurisdiction was most vigorously contended. Accordingly, the local boards of health in Louisiana are subordinate to the State Board of Health. Nevertheless, ample latitude for local freedom of action exists to allow for unhampered expression of local ingenuity in guarding community health.

The national census showed Louisiana to be predominantly rural up to 1950. During almost the entire history of civilization the rural areas of the world were safer places to live in than urban areas. However, in the western world, the great strides in urban sanitation and other hygienic measures had tipped the scales of the forces of health in favor of urban areas during the decade beginning with 1920. This was also true for Louisiana. Thus, impetus for organizing health services in rural areas increased noticeably during that decade. It appears that by 1950, in Louisiana, the unfavorable situation of the rural areas had almost disappeared except for parishes with very high proportion of rural population. (See Table 10)

In the study of mortality in the 64 parishes, nevertheless, a great deal of variation exists. It appears that if the mortality in the parishes with the highest rates were to be decreased to those in the parishes with the lowest rates, then mortality rates in Louisiana would be quite a good deal lower than the average for the United States. The problem is, therefore, to discover what forces are operating in the parishes with the highest and in those with the lowest rates. If this were known, then it would become possible to pinpoint the public health efforts in each parish in order to develop and maintain the best

[1] 1872. Slaughter House Cases
1886. Louisiana State Board of Health vs. Morgan's Texas Railroad & Steamship Co.

status of health, and also to set priorities for places and programs.

THE PLAN OF ANALYSIS

A cursory examination of the data in Table 1 for the 64 parishes, listed in alphabetical order, makes it quite evident that the maze of figures gives very little aid in discerning any pattern in the mortality forces. If similar tables were constructed, giving data on socio-economic factors, the same obscurity would be evident. The problem, therefore, is to select a method of analysis in which:

1. The identity of each parish is maintained in relation to other parishes and in relation to the many variable factors.
2. The multiple factors do not hide relationships of the parishes insofar as they have a strong or weak overall force of mortality or health.
3. The overall force of health can be compared with the overall force of mortality in each parish and in the interrelationships between parishes.
4. Patterns of interrelationships can be brought to light.

In order to meet these conditions, a technique for computing a single cumulative Index of Mortality and a single cumulative Index of Health for each parish was used. (See Tables 2 and 21). Because these indices are composites of a number of apparently related variables, and because these variables also have a certain degree of independence in their operation from parish to parish, and furthermore, because some of the variants may manifest themselves in extreme degrees of divergence, and finally, because there may be a certain amount of unavoidable inaccuracies in the data resulting from presently uncontrolled aspects of collecting such data, a method of comparison was used which tended to suppress the effect of such inaccuracies and extreme variablities by dilution, namely, the quartile grouping of parishes. This method is predicated on the premise that the degree of interdependence of the socio-economic factors in the dynamic bio-social whole is at least as great as the degree of divergence possible due to their independence. It would, therefore, be expected that most of the factors conducive to greater mortality would be highest in the quartile of parishes with the highest mortality rates, and correspondingly lower in the quartiles with successively lower forces of mortality. By using the quartile method, therefore, the direction of the force of each factor can be elicited despite the scatter of the data.

THE ANALYSIS

The point that the *physical* health of a population is inversely related to the rate of its mortality, and that infant mortality is one of the most sensitive of physical health indices need not be belabored here. However, it is well known that some factors having high degrees of sensitivity may also bear certain losses of specificity, particularly in short-term or cross-sectional studies, as this one is. Anyone working with infant mortality rates is well aware that this is such a factor. It is, therefore, desirable, for this study, to create a measure of the force of mortality that would retain as much sensitivity as possible and still be within the limits of validity for specificity. It is hoped that this could be accomplished by using 5-year average mortality data, by including a number of recognized basic mortality factors into *one cumulative* index number to represent the *force of mortality*, and by giving to each factor such a weight as would tend to balance the sensitivity and specificity in the final cumulative index number. It is also hoped that a somewhat similar approach could be used in arriving at what might be called the *cumulative health index* or *cumulative force of health*. The above technique was carried out as noted in Tables 2 and 3, by designating numerically the positions of each parish for each type of death rate from highest to lowest, and calculating the average of all these positions. The average, or index number, for each parish is its cumulative force of mortality. In the same manner, as noted in Table 21, the cumulative force of health was calculated for each parish.

Such a sensitive factor as infant mortality was given extra weight in the calculation of the cumulative force of mortality by including the three of the special phases of infant mortality into the average, namely, neonatal mortality, deaths under one day, and deaths due to prematurity. The other rates included into the average are for stillbirths, maternal deaths, and crude deaths.

The social factors relating to the force of mortality and the force of health lend themselves to classification into 2 groups, namely, the socio-economic factors and socio-medical factors. In order to find out to what extent the individual factors in these two groups correlate to the cumulative force of mortality, the quartile method was applied, as explained above.

EXPLANATION OF TABULAR TECHNIQUE

Table 5 shows the application of the quartile method of analysis whereby the various levels of the median incomes of the parishes are related to the parishes arranged in accordance with their cumulative force of mortality from the highest to the lowest index number. Such a table is somewhat difficult to interpret unless close attention be paid to the arrangement pattern. Thus the figure, 10 parishes, in the first quartile along the line designated as $1,200 is interpreted as follows: There are 10 parishes in the quartile of the 16 parishes with the highest indices of cumulative forces of mortality in which the median annual incomes of the families are less than $1,200. The rest of the quantities are correspondingly interpreted. It will be noted that the quantities in each column are cumulative, so that if the levels of median annual income were extended to as high as $3,000, the last quantities in each of the four columns would include all the parishes in each quartile, i.e., each quantity would be 16 parishes. This cumulative method appears to show the relationship between the quartiles better than if the quantities were not designated as cumulative. As pointed out above, this method of dealing with parishes in groups appears to elicit more easily whatever pattern of relationships that may exist in a long list of numbers having a good deal of scatter, if such relationships do indeed exist. This is observed by examining Table 4 in column entitled "Median Income in Dollars," and then examining Table 5 in which the analysis is made by the grouping method.

The rest of the tables, similarly organized, are interpreted in a similar manner. The conclusion derived from each such table is given just below each table.

It should also be noted that in Table 21, although the parishes are arranged from highest to lowest cumulative forces of mortality, the index numbers for the cumulative health forces have inverse values, i.e., the lower the number the lower the cumulative health forces.

INTERPRETATION OF TABLES

Table 5 shows that there appears to be a fairly evident correlation between the median annual income level of families in a parish and its mortality forces, i.e., the higher the income level, the lower the mortality. It also shows that a median annual income level of $1,600 is the critical level in Louisiana since most of the parishes with high mortality forces have median annual income levels below this figure.

Table 6 gives corollary evidence to that of Table 5. It shows that the forces of mortality are critically reduced in most of the parishes where at least 65 per cent of the families have median annual incomes of $2,000 or more.

Table 7 shows that the greater the dilapidation of houses in a parish the greater should we expect the forces of mortality to be. It shows also that most of the parishes with lower forces of mortality have less than 25 per cent of their houses dilapidated.

Table 8 gives corollary evidence to that of Table 7. It shows that most parishes having lower forces of mortality have higher percentages of their houses provided with private toilets, baths, and hot or cold running water. It also shows that most of the parishes with higher forces of mortality have less than 30 per cent of

their houses provided with these sanitary facilities.

Table 9 shows that under conditions now prevalent in Louisiana the force of mortality can be expected to be greater in those parishes with higher proportions of Negro population. Most of the parishes with higher forces of mortality have populations with more than 35 per cent Negro population.

Table 10 shows that the proportion of rural population in parishes has little if any relation to the forces of mortality, except possibly where the proportion of rural population is very high, there is a tendency also for the forces of mortality to be increased.

Table 11 shows some correlation between the trend of decreasing population and that of increasing forces of mortality. Since decreasing population is ordinarily associated with economic stagnation or deterioration, the latter could be interpreted as being the germain cause influencing the increase in the forces of mortality. The correlation begins to become evident where the decreases in population during the decennial are greater than 5 per cent.

Table 12 shows that parishes having larger proportions of older people (i.e., 65 years or older) can be expected to have higher cumulative forces of mortality. Most of the parishes with higher forces of mortality have more than 7 per cent of their populations in the older age-group.

Table 13 shows that there is scarcely any relation between the population size of parishes and their forces of mortality.

Table 14 shows that there is practically no relationship between the per capita assessed valuation in parishes and their forces of mortality.

Table 15 shows that the higher the per cent of deliveries taking place in hospitals the lower the forces of mortality. Most of the parishes with higher forces of mortality have less than 85 to 90 per cent of their deliveries in hospitals. This appears to be the *critical level* below which mortality increases significantly.

Table 16 shows that the percentage of deliveries attended by physicians appears to influence the force of mortality fairly well. When parishes have more than 90 per cent of deliveries attended by physicians, there is a strong tendency for them to be among the parishes with lower forces of mortality.

Table 18 shows that, when deliveries in State Hospitals are excepted, there appears to be only a slight indication that the per cent of deliveries attended by physicians influence the forces of mortality. When, however, deliveries in State Hospitals are included (see Tables 15 and 16), a definite relationship between medical care and the force of mortality becomes evident, i.e., the higher the percentage of deliveries attended by physicians, the lower the forces of mortality. It may, therefore, be assumed that the State Hospital system adds enough weight to the medical efforts in the State to influence effectively the lowering of the force of mortality.

Table 19 shows that, under the conditions prevailing in Louisiana, the ratio of population per hospital bed in parishes does not appear as a factor influencing the force of mortality. This, of course, does not mean that the ratio of hospital beds per unit of population is not an important health index. It appears to indicate, as manifested in Table 18, that the regional distribution of state hospitals precludes a comparison between parishes. This is so because the state hospitals take care of 25 to 50 per cent of the deliveries in neighboring parishes for a distance of about a 40 mile radius if the roads are good from the populated areas of the neighboring parishes to the state hospital. This study also shows that when more than one state hospital is within a 40 mile radius of a population group, there is a tendency for the deliveries to be distributed among them, the larger hospital drawing the larger number. For a large hospital like Charity Hospital in New Orleans, the drawing distance for 25 to 50 per cent of the deliveries of the neighbor-

ing parishes is increased to a radius of 60 miles. If the distance is increased to a radius of 120 miles, the drawing strength is reduced to 10 to 20 per cent. There are certain exceptions to this, for example, the Charity Hospital in New Orleans took care of 32 per cent of the deliveries of Jackson Parish in 1955 although the distance is about 300 miles.

Table 20 shows that the ratio of population per physician in parishes, under conditions prevailing in Louisiana, does not appear to influence the force of mortality. This is probably due to the availability of medical care at state hospitals, and to the ample use of medical practitioners across parish lines. However, the force of mortality tends to be lower in those parishes where the ratio of population per physician is less than 2,250 persons per physician. In a cross-sectional (or static) study such as this, the relation of population unit per physician would not be expected to show as strongly positive a correlation as in a study of trend covering a relatively long interval of time.

Table 23 shows that, under conditions prevailing in Louisiana, there is scarcely any correlation between the forces of mortality in a parish and the median number of school years completed in the population of 25 years of age and over. This does not mean that the education level of a population does not influence its forces of mortality. The real reason for the lack of correlation in Louisiana is not certain. It may be due to the fact that the education level over the State has been raised above the critical level where lack of education becomes a significant factor influencing health.

Table 22 is an attempt to relate the force of mortality in each parish to its force of health in order to determine which parishes manifest worse health conditions than expected, and which manifest better health conditions than expected. It is interesting to note that the first nine parishes in the table which have the poorest force of health are also among those which show the strongest force of mortality. There are 23 other parishes which show a similar correspondence between the forces of health and the forces of mortality. In half of the parishes, therefore, the level of the health forces corresponds to the level of the mortality forces. In the other 32 parishes a discrepancy between these forces appears to exist or is suspected to exist. In 18 of these parishes the health conditions appear better than expected, and in 14 parishes the health conditions appear worse than expected. The results in this table, therefore, point the way for setting priorities and pinpointing further actions by the health department.

Any interpretation of statistical data must be carefully considered. It must be borne in mind that this is a cross-sectional study, the findings being related to circumstances pertaining only to the present. This being the case, factors which would be expected to correlate significantly with health and ill-health when considered in a long flow of time, such as level of education, population per physician, and population per hospital bed, show no evidence of effectual relationship. There are indeed many reasons why the correlation of certain factors in the light of historical trend may manifest strong significance while in a cross-sectional study may appear unimportant.

CONCLUSION

The technique used in this study has served as a satisfactory instrument in dealing with many health jurisdictions and many variable factors and yet not using too much detail as relates to the individual factors and places. It, therefore, is useful in program planning for setting priorities for further study and action, i.e., it gives the health administrator a tool for pinpointing programs.

The study should be considered an *interim report*, since it is obvious that the present analysis has not exhausted the variable factors that still need to be studied. The relationship between health conditions, on the one hand, and particular

(Continued on page 92)

TABLE 1
VARIOUS MORTALITY RATES IN LOUISIANA
1951-1955 AVERAGE

	Parishes Arranged in Alphabetical Order	Infant Mortality per 1,000 Live Births	Neonatal Mortality per 1,000 Live Births	Infant Deaths Under 1 Day per 1,000 Live Births	Deaths Due to Immaturity per 1,000 Live Births	Stillbirths per 1,000 Live Births	Maternal Deaths per 100,000 Live Births	Deaths per 1,000 Population
01	Acadia	32.3	20.6	10.3	8.3	20.6	68.8	7.9
02	Allen	33.0	22.6	12.2	5.2	17.4	34.8	8.4
03	Ascension	31.0	19.2	11.8	4.4	23.6	59.1	9.6
04	Assumption	33.7	15.8	7.9	2.0	21.8	158.3	9.9
05	Avoyelles	30.4	18.6	8.8	7.9	22.6	137.3	8.2
06	Beauregard	34.7	24.3	10.4	10.4	19.1	242.6	8.9
07	Bienville	38.5	28.8	12.0	9.6	31.3	0.0	9.8
08	Bossier	26.2	18.3	9.1	7.9	15.8	24.4	6.7
09	Caddo	31.3	22.6	11.5	11.4	20.6	66.8	8.9
10	Calcasieu	29.3	20.5	10.7	7.9	17.8	60.2	7.1
11	Caldwell	34.5	25.9	8.6	8.6	21.6	86.3	8.6
12	Cameron	33.8	27.0	13.5	6.8	20.3	0.0	6.9
13	Catahoula	26.9	21.0	6.0	3.0	15.0	0.0	9.1
14	Claiborne	29.8	19.8	11.9	9.9	27.8	39.7	8.2
15	Concordia	47.3	31.6	15.8	9.9	19.7	118.3	12.1
16	DeSoto	38.8	26.9	13.4	10.4	22.4	149.3	11.4
17	E. Baton Rouge	24.7	17.5	9.1	4.9	17.7	60.8	6.4
18	E. Carroll	45.4	25.6	11.8	9.9	27.6	197.1	11.7
19	E. Feliciana	42.0	28.0	11.7	7.0	21.0	93.3	7.2
20	Evangeline	45.9	21.8	10.9	7.3	19.3	145.0	7.4
21	Franklin	39.2	20.2	10.1	9.0	19.1	89.6	8.2
22	Grant	36.7	24.5	9.2	9.2	15.3	61.1	9.3
23	Iberia	37.0	22.8	13.4	7.1	22.8	110.2	8.4
24	Iberville	43.0	27.8	15.2	7.6	26.6	177.2	11.3
25	Jackson	29.4	18.7	10.7	5.3	24.1	160.3	8.8
26	Jefferson	21.3	16.0	8.5	4.8	15.5	43.5	6.7
27	Jefferson Davis	27.8	18.1	9.7	4.8	19.3	96.8	7.8
28	Lafayette	38.2	20.9	11.2	7.6	19.4	40.8	7.4
29	Lafourche	28.4	19.7	10.2	5.8	21.9	116.6	7.3
30	LaSalle	33.5	24.4	15.2	9.1	18.3	121.8	8.4
31	Lincoln	28.6	20.2	10.1	8.4	25.3	134.7	7.4
32	Livingston	30.6	21.6	12.6	9.0	19.8	72.1	7.1
33	Madison	49.8	31.4	14.8	11.1	31.4	147.7	10.5
34	Morehouse	42.0	28.0	12.2	11.4	24.5	192.5	8.7
35	Natchitoches	40.1	25.7	10.3	9.3	28.8	82.3	8.7
36	Orleans	28.9	22.4	12.3	6.4	20.0	49.1	10.7
37	Ouachita	33.6	23.9	11.7	10.5	23.5	113.3	9.4
38	Plaquemines	25.9	18.5	9.2	7.4	14.8	147.9	7.3
39	Pointe Coupee	37.6	25.0	11.0	7.8	28.2	250.5	9.7
40	Rapides	31.9	21.6	9.9	7.7	19.1	80.7	8.5
41	Red River	47.1	30.3	13.5	16.8	26.9	403.5	9.7
42	Richland	47.2	33.4	17.3	12.7	25.3	161.0	9.4
43	Sabine	33.3	25.0	12.5	6.3	20.8	83.4	8.1
44	St. Bernard	27.6	20.7	13.8	5.2	20.7	34.5	9.2
45	St. Charles	23.3	15.6	9.7	3.9	17.5	77.9	8.0
46	St. Helena	48.1	26.7	16.0	5.3	21.4	0.0	7.3
47	St. James	44.7	29.2	15.6	3.9	23.3	77.8	10.8
48	St. John	36.5	21.1	9.6	3.8	17.3	76.8	9.7
49	St. Landry	41.3	21.8	10.1	7.3	25.5	56.6	7.6
50	St. Martin	37.3	19.8	11.7	7.0	24.5	163.1	7.7
51	St. Mary	38.0	21.5	10.7	4.1	26.4	115.7	10.0
52	St. Tammany	31.4	20.6	10.9	7.3	16.9	48.4	10.3
53	Tangipahoa	30.7	20.7	11.8	5.9	24.2	59.1	9.0
54	Tensas	42.8	25.2	10.1	12.6	30.2	252.1	11.7
55	Terrebonne	30.9	21.4	12.6	6.3	24.0	12.6	7.7
56	Union	33.1	21.3	11.8	9.5	28.4	0.0	8.1
57	Vermilion	29.1	21.9	9.4	6.2	13.5	104.0	7.4
58	Vernon	32.3	22.5	12.7	8.4	19.7	112.5	10.0
59	Washington	34.7	23.9	11.6	9.1	20.6	115.6	8.7
60	Webster	32.9	25.2	14.5	12.6	23.3	58.2	7.9
61	W. Baton Rouge	36.1	21.1	9.0	6.0	27.1	0.0	9.8
62	W. Carroll	33.9	20.4	9.0	6.8	27.1	226.4	7.6
63	W. Feliciana	50.6	35.0	19.5	11.8	27.2	77.7	9.4
64	Winn	28.0	19.6	11.2	11.2	19.6	0.0	8.3
	Louisiana State Average	32.0	21.8	11.2	7.5	20.9	80.2	9.0
	United States 1950-54 Average	28.0	20.5	9.8	6.3	18.3	68.0	9.5

TABLE 2

POSITION OF EACH PARISH ACCORDING TO TYPE OF DEATH RATE FROM HIGHEST TO LOWEST RATES, AND THE POSITION OF EACH PARISH ACCORDING TO THE CUMULATIVE MORTALITY FORCE (INDEX NUMBER) FROM HIGHEST TO LOWEST: BASED ON 5 YEAR AVERAGES, 1951-1955.

	Parishes Arranged in Alphabetical Order	Infant Mortality, Position	Neonatal Mortality, Position	Infant Deaths Under 1 day, Position	Death Due to Immaturity, Position	Stillbirth, Position	Maternal Death, Position	Crude Death, Position	Cumulative Mortality Forces: Index Number*
01	Acadia	40	45	42	27	38	40	44	39.4
02	Allen	37	28	21	54	56	54	34	40.6
03	Ascension	44	55	25	58	23	45	18	38.3
04	Assumption	32	63	63	64	31	12	12	39.6
05	Avoyelles	48	57	60	30	28	17	38	39.7
06	Beauregard	27	21	41	11	49	4	26	25.6
07	Bienville	18	7	22	16	2	58	13	19.4
08	Bossier	60	59	56	29	59	56	62	54.4
09	Caddo	43	27	32	6	37	41	27	30.4
10	Calcasieu	51	47	39	28	53	44	59	45.9
11	Caldwell	29	14	61	24	32	31	32	31.9
12	Cameron	31	11	12	43	40	59	61	36.7
13	Catahoula	59	41	64	63	62	60	24	53.3
14	Claiborne	49	51	23	13	7	53	39	33.6
15	Concordia	4	3	4	14	43	20	1	12.7
16	DeSoto	17	12	13	12	29	13	4	14.3
17	E. Baton Rouge	62	61	57	55	54	43	64	56.6
18	E. Carroll	8	16	24	15	8	6	2	11.3
19	E. Feliciana	13	8	28	41	34	29	58	30.1
20	Evangeline	7	32	36	38	48	16	51	32.6
21	Franklin	16	49	48	23	50	30	40	36.6
22	Grant	24	22	54	19	61	42	22	34.9
23	Iberia	23	26	14	39	27	26	35	27.1
24	Iberville	10	10	6	34	13	8	5	12.3
25	Jackson	50	56	38	52	21	11	28	36.7
26	Jefferson	64	62	62	57	60	51	63	59.9
27	Jefferson Davis	57	60	50	56	47	28	46	49.1
28	Lafayette	19	42	33	33	46	52	52	39.6
29	Lafourche	55	53	44	50	30	21	55	44.0
30	LaSalle	34	23	7	21	52	19	36	27.4
31	Lincoln	54	50	47	26	17	18	53	37.9
32	Livingston	47	34	16	22	42	39	60	37.1
33	Madison	2	4	8	9	1	15	8	6.7
34	Morehouse	12	9	20	7	18	7	29	14.6
35	Natchitoches	15	15	43	18	4	33	30	22.6
36	Orleans	53	30	19	44	41	49	7	34.7
37	Ouachita	33	25	29	10	24	24	19	23.4
38	Plaquemines	61	58	55	35	63	14	56	48.9
39	Pointe Coupee	22	19	35	31	6	3	15	18.7
40	Rapides	41	35	49	32	51	34	33	39.3
41	Red River	6	5	11	1	12	1	16	7.4
42	Richland	5	2	2	2	16	10	20	8.1
43	Sabine	35	20	18	46	35	32	41	32.4
44	St. Bernard	58	43	10	53	36	55	23	39.7
45	St. Charles	63	64	51	61	55	35	43	53.1
46	St. Helena	3	13	3	51	33	61	57	31.6
47	St. James	9	6	5	60	25	36	6	21.0
48	St. John	25	38	52	62	57	38	17	41.3
49	St. Landry	14	33	46	37	15	47	49	34.4
50	St. Martin	21	52	30	40	19	9	47	31.1
51	St. Mary	20	36	40	59	14	22	10	28.7
52	St. Tammany	42	46	37	36	58	50	9	39.7
53	Tangipahoa	46	44	26	49	20	46	25	36.6
54	Tensas	11	17	45	4	3	2	3	12.1
55	Terrebonne	45	37	17	45	22	57	48	38.7
56	Union	36	39	27	17	5	62	42	32.6
57	Vermilion	52	31	53	47	64	27	54	46.9
58	Vernon	39	29	15	25	44	25	11	26.9
59	Washington	28	24	31	20	39	23	31	28.0
60	Webster	38	18	9	3	26	48	45	26.7
61	W. Baton Rouge	26	40	59	48	11	63	14	37.3
62	W. Carroll	30	48	58	42	10	5	50	34.7
63	W. Feliciana	1	1	1	5	9	37	21	10.1
64	Winn	56	54	34	8	45	64	37	42.6

* Index Number is calculated by averaging the position numbers of each parish.

TABLE 3
POSITION OF EACH PARISH ACCORDING TO THE CUMULATIVE FORCE OF MORTALITY (INDEX NUMBER) PREVAILING FOR THE FIVE-YEAR PERIOD, 1951-1955, FROM HIGHEST RISK OF DEATH TO THE LOWEST.

	Parishes Arranged in the order of their **Cumulative Force of Mortality** from **Highest** to **Lowest**	Cumulative Mortality Forces Index Number*	Infant Mortality, Position	Neonatal Mortality, Position	Infant Deaths Under 1 day, Position	Deaths due to Immaturity, Position	Stillbirths, Position	Maternal Deaths, Position	Crude Deaths, Position
01	Madison	6.7	2	4	8	9	1	15	8
02	Red River	7.4	6	5	11	1	12	1	16
03	Richland	8.1	5	2	2	2	16	10	20
04	West Feliciana	10.1	1	1	1	5	9	37	21
05	East Carroll	11.3	8	16	24	15	8	6	2
06	Tensas	12.1	11	17	45	4	3	2	3
07	Iberville	12.3	10	10	6	34	13	8	5
08	Concordia	12.7	44	33	4	14	43	20	1
09	DeSoto	14.3	17	12	13	12	29	13	4
10	Morehouse	14.6	12	9	20	7	18	7	29
11	Pointe Coupee	18.7	22	19	35	31	6	3	15
12	Bienville	19.4	18	7	22	16	2	58	13
13	St. James	21.0	9	6	5	60	25	36	6
14	Natchitoches	22.6	15	15	43	18	4	33	30
15	Ouachita	23.4	33	25	29	10	24	24	19
16	Beauregard	25.6	27	21	41	11	49	4	26
17	Webster	26.7	38	18	9	3	26	48	45
18	Vernon	26.9	39	29	15	25	44	25	11
19	Iberia	27.1	23	26	14	39	27	26	35
20	LaSalle	27.4	34	23	7	21	52	19	36
21	Washington	28.0	28	24	31	20	39	23	31
22	St. Mary	28.7	20	36	40	59	14	22	10
23	East Feliciana	30.1	13	8	28	41	34	29	58
24	Caddo	30.4	43	27	32	6	37	41	27
25	St. Martin	31.1	21	52	30	40	19	9	47
26	St. Helena	31.6	3	13	3	51	33	61	57
27	Caldwell	31.9	29	14	61	24	32	31	32
28	Sabine	32.4	35	20	18	46	35	32	41
29	Union	32.6	36	39	27	17	5	62	42
30	Evangeline	32.6	7	32	36	38	48	16	51
31	Claiborne	33.6	49	51	23	13	7	53	39
32	St. Landry	34.4	14	33	46	37	15	47	49
33	West Carroll	34.7	30	48	58	42	10	5	50
34	Orleans	34.7	53	30	19	44	41	49	7
35	Grant	34.9	24	22	54	19	61	42	22
36	Franklin	36.6	16	49	48	23	50	30	40
37	Tangipahoa	36.6	46	44	26	49	20	46	25
38	Jackson	36.7	50	56	38	52	21	11	28
39	Cameron	36.7	31	11	12	43	40	59	61
40	Livingston	37.1	47	34	16	22	42	39	60
41	W. Baton Rouge	37.3	26	40	59	48	11	63	14
42	Lincoln	37.9	54	50	47	26	17	18	53
43	Ascension	38.3	44	55	25	58	23	45	18
44	Terrebonne	38.7	45	37	17	45	22	57	48
45	Rapides	39.3	41	35	49	32	51	34	33
46	Acadia	39.4	40	45	42	27	38	40	44
47	Assumption	39.6	32	63	63	64	31	12	12
48	Lafayette	39.6	19	42	33	33	46	52	52
49	St. Bernard	39.7	58	43	10	53	36	55	23
50	St. Tammany	39.7	42	46	37	36	58	50	9
51	Avoyelles	39.7	48	57	60	30	28	17	38
52	Allen	40.6	37	28	21	54	56	54	34
53	St. John	41.3	25	38	52	62	57	38	17
54	Winn	42.6	56	54	34	8	45	64	37
55	Lafourche	44.0	55	53	44	50	30	21	55
56	Calcasieu	45.9	51	47	39	28	53	44	59
57	Vermilion	46.9	52	31	53	47	64	27	54
58	Plaquemines	48.9	61	58	55	35	63	14	56
59	Jefferson Davis	49.1	57	60	50	56	47	28	46
60	St. Charles	53.1	63	64	51	61	55	35	43
61	Catahoula	53.3	59	41	64	63	62	60	24
62	Bossier	54.4	60	59	56	29	59	56	62
63	E. Baton Rouge	56.6	62	61	57	55	54	43	64
64	Jefferson	59.9	64	62	62	57	60	51	63

* Index Number is calculated by averaging the position numbers of each parish.

TABLE 4
SOCIO-ECONOMIC FACTORS
RELATED TO THE CUMULATIVE FORCE OF MORTALITY IN EACH PARISH IN LOUISIANA.

Parishes Listed According to their Cumulative Force of Mortality Indices, From Highest to Lowest Index	Families and unrelated Individuals 1950		% Dilapidated Houses, 1950	% of Houses with Private Toilets, Baths, and Hot or Cold Running Water—1950	% Negro Population July 1, 1950
	Median Income Dollars	% Having incomes Less than $2,000			
See Tables 2 and 3	See Table 5	See Table 6	See Table 7	See Table 8	See Table 9
01 Madison	982	77.7	40.6	15.3	66.2
02 Red River	1030	75.6	29.1	12.5	50.0
03 Richland	1224	68.6	39.7	20.0	41.0
04 West Feliciana	1100	76.4	53.6	18.7	71.2
05 East Carroll	835	81.4	25.7	13.3	61.1
06 Tensas	840	77.5	51.4	15.1	64.8
07 Iberville	1381	64.6	34.5	28.3	48.9
08 Concordia	1058	72.3	7.8	19.6	59.3
09 DeSoto	1164	71.5	25.3	23.7	56.6
10 Morehouse	1533	57.7	24.9	26.5	48.2
11 Pointe Coupee	1124	73.8	36.7	22.1	53.7
12 Bienville	1272	70.1	35.0	18.6	49.2
13 St. James	1118	73.0	30.9	22.9	50.0
14 Natchitoches	965	75.7	30.9	19.5	44.9
15 Ouachita	2052	49.0	15.2	45.2	33.0
16 Beauregard	1573	61.8	16.8	34.0	17.0
17 Webster	1920	51.9	20.4	42.8	36.5
18 Vernon	1089	73.6	24.7	25.4	11.7
19 Iberia	1835	53.5	23.4	46.0	32.4
20 LaSalle	1613	58.7	12.1	27.8	11.2
21 Washington	1679	56.9	28.2	38.9	31.5
22 St. Mary	1831	53.7	31.6	38.3	38.3
23 East Feliciana	1007	75.8	36.3	19.8	23.9
24 Caddo	2157	47.3	18.2	54.5	37.6
25 St. Martin	1316	67.4	20.4	22.5	37.0
26 St. Helena	1058	73.3	40.6	12.7	53.1
27 Caldwell	1355	69.3	27.9	18.4	28.5
28 Sabine	1214	72.8	27.0	15.2	20.6
29 Union	1473	64.9	42.7	19.1	34.6
30 Evangeline	1247	69.2	24.0	25.5	23.9
31 Claiborne	1458	60.8	31.4	30.0	51.7
32 St. Landry	1242	69.9	27.2	26.7	44.6
33 West Carroll	1064	77.4	18.5	12.2	18.1
34 Orleans	2267	44.4	14.7	74.7	32.0
35 Grant	1194	70.8	18.2	13.8	24.2
36 Franklin	1224	69.8	36.6	14.9	36.7
37 Tangipahoa	1204	70.7	36.4	32.4	31.2
38 Jackson	1876	52.6	17.5	31.6	29.8
39 Cameron	2090	47.6	16.5	27.4	9.3
40 Livingston	1645	56.5	24.1	27.9	14.7
41 West Baton Rouge	1437	59.9	30.0	30.1	53.2
42 Lincoln	1212	66.9	24.3	36.2	40.2
43 Ascension	1410	61.7	27.6	30.6	35.4
44 Terrebonne	1901	52.1	20.6	39.4	24.6
45 Rapides	1690	57.0	17.8	43.7	33.2
46 Acadia	1563	61.1	20.0	35.0	19.1
47 Assumption	1169	75.7	25.6	20.0	41.8
48 Lafayette	1680	57.1	16.3	52.5	27.2
49 St. Bernard	2020	49.6	19.3	52.6	14.6
50 St. Tammany	1446	64.2	13.8	49.4	29.4
51 Avoyelles	1215	72.2	28.3	23.5	26.1
52 Allen	1634	59.1	18.8	29.7	24.2
53 St. John	1707	56.7	13.0	25.0	49.9
54 Winn	1315	70.5	21.4	21.4	27.4
55 Lafourche	1920	52.0	19.6	37.2	13.5
56 Calcasieu	2668	37.8	15.5	55.2	23.0
57 Vermilion	1269	68.2	22.2	33.2	12.7
58 Plaquemines	2197	45.9	26.9	35.9	38.7
59 Jefferson Davis	1656	57.9	17.7	37.3	21.6
60 St. Charles	1907	51.7	17.9	38.1	32.6
61 Catahoula	1109	75.6	12.0	12.8	35.1
62 Bossier	1744	54.5	25.8	44.1	34.7
63 East Baton Rouge	2618	41.0	11.5	70.0	33.3
64 Jefferson	2762	32.3	14.0	68.4	15.7
Total	1810	53.9	21.3	47.2	33.0

TABLE 4—(Continued)
SOCIO-ECONOMIC FACTORS
RELATED TO THE CUMULATIVE FORCE OF MORTALITY IN EACH PARISH IN LOUISIANA.

Parishes Listed According to their Cumulative Force of Mortality Indices, From Highest to Lowest Index	% Rural Population July 1, 1950	Estimated Population Increase or Decrease 1940 to 1950 in %	% Population 65 years and Older—1950	Population July 1, 1956	Assessed Valuations Per Capita 1956
See Tables 2 and 3	See Table 10	See Table 11	See Table 12	See Table 13	See Table 14
01 Madison	55.5	−5.4	7.7	16,828	971
02 Red River	100.0	−23.7	8.7	9,758	742
03 Richland	88.3	−7.5	6.4	25,322	688
04 West Feliciana	100.0	−13.2	6.8	9,201	458
05 East Carroll	74.7	−14.3	8.1	14,599	744
06 Tensas	100.0	−17.1	9.3	11,499	750
07 Iberville	78.6	−3.5	8.6	26,142	646
08 Concordia	73.3	−1.1	7.9	14,293	723
09 DeSoto	81.8	−23.3	9.6	19,770	832
10 Morehouse	60.1	16.2	6.4	34,828	996
11 Pointe Coupee	87.1	−9.0	8.1	20,491	647
12 Bienville	100.0	−20.2	8.8	16,090	893
13 St. James	100.0	−7.6	8.2	14,546	734
14 Natchitoches	74.0	−7.0	8.1	36,359	676
15 Ouachita	34.6	26.3	6.7	84,426	1,093
16 Beauregard	67.4	19.7	7.8	19,589	874
17 Webster	63.2	6.0	6.7	36,972	974
18 Vernon	75.4	−0.9	8.5	36,419	350
19 Iberia	47.1	7.7	6.1	41,859	1,002
20 LaSalle	100.0	16.0	7.3	13,812	827
21 Washington	53.6	11.4	5.6	40,824	661
22 St. Mary	48.4	14.0	7.2	38,593	1,212
23 East Feliciana	64.6	6.1	10.7	19,816	393
24 Caddo	24.4	17.5	6.8	193,010	1,676
25 St. Martin	82.5	−0.2	5.7	26,330	469
26 St. Helena	100.0	−5.5	7.5	8,683	544
27 Caldwell	100.0	−14.6	8.6	9,198	844
28 Sabine	100.0	−11.5	8.0	19,192	544
29 Union	100.0	−8.6	7.7	18,016	802
30 Evangeline	79.0	3.7	4.8	32,334	616
31 Claiborne	68.9	−16.1	7.9	22,070	975
32 St. Landry	74.7	9.8	5.1	82,849	531
33 West Carroll	100.0	−10.4	6.7	15,995	572
34 Orleans	0.0	15.3	7.1	617,890	1,337
35 Grant	100.0	−10.5	9.0	13,220	600
36 Franklin	87.6	−9.3	6.2	27,501	536
37 Tangipahoa	72.0	16.9	7.0	58,033	405
38 Jackson	79.9	−13.3	7.2	13,949	868
39 Cameron	100.0	−13.3	6.0	5,644	1,990
40 Livingston	100.0	12.7	5.8	21,472	432
41 West Baton Rouge	73.6	4.2	7.4	12,038	833
42 Lincoln	59.8	4.0	7.3	26,405	638
43 Ascension	81.5	5.5	7.7	23,122	617
44 Terrebonne	62.3	20.8	5.4	47,986	782
45 Rapides	54.4	23.5	7.0	101,448	497
46 Acadia	52.9	1.7	5.8	47,545	899
47 Assumption	100.0	−6.8	8.1	16,490	648
48 Lafayette	42.0	31.4	5.0	66,368	523
49 St. Bernard	76.2	52.3	4.9	13,465	2,173
50 St. Tammany	68.2	14.2	8.5	29,088	717
51 Avoyelles	78.2	−3.1	7.1	37,266	497
52 Allen	70.3	7.4	6.4	19,645	554
53 St. John	70.0	0.6	6.9	14,921	760
54 Winn	65.0	−4.8	8.5	15,616	649
55 Lafourche	75.0	9.3	5.4	44,452	773
56 Calcasieu	27.8	58.6	4.9	110,343	1,324
57 Vermilion	62.3	−2.2	6.3	36,419	645
58 Plaquemines	100.0	15.6	5.3	15,439	2,584
59 Jefferson Davis	52.4	8.7	6.5	27,618	1,042
60 St. Charles	74.9	8.5	6.2	14,016	1,566
61 Catahoula	100.0	−19.0	7.7	10,094	680
62 Bossier	58.2	21.0	5.1	44,497	802
63 East Baton Rouge	14.2	79.0	4.7	201,871	1,863
64 Jefferson	11.2	106.0	4.2	137,278	769
Total	45.2	13.5	6.6	2,883,302	1,029

TABLE 5
PARISHES IN LOUISIANA, CLASSIFIED INTO QUARTILES ACCORDING TO THEIR FORCE OF MORTALITY INDICES, AND GROUPED ACCORDING TO THE MEDIAN ANNUAL INCOMES OF FAMILIES IN EACH PARISH, 1950.

Median Annual Incomes of Families in Each Parish with less than	Parishes arranged in 4 Quartiles (16 parishes in each Quartile), from Highest to Lowest Index of the forces of Mortality.			
	1st Quartile (Parishes with Highest Indices of the Forces of Mortality)	2nd Quartile	3rd Quartile	4th Quartile (Parishes with Lowest Indices of the Forces of Mortality)
$1,200	10 parishes	3 parishes	3 parishes	1 parish
1,300	12 parishes	6 parishes	6 parishes	3 parishes
1,600	15 parishes	10 parishes	9 parishes	5 parishes
1,800	15 parishes	12 parishes	12 parishes	9 parishes
2,100	16 parishes	15 parishes	15 parishes	12 parishes

There appears to be a **fairly evident correlation** between the level of the **median annual income of the families** in a parish and the force of mortality. The higher the median annual income level, the less is the force of mortality. It appears, however, that a median annual income of **$1,600** is the **critical level** in Louisiana below which most of the parishes with high forces of mortality are found.

TABLE 6
PARISHES IN LOUISIANA, CLASSIFIED INTO QUARTILES ACCORDING TO THEIR FORCE OF MORTALITY INDICES, AND GROUPED ACCORDING TO THE PERCENTAGE OF FAMILIES IN EACH PARISH WITH INCOMES LOWER THAN $2,000, 1950.

Percentage of Families in Each Parish with Incomes Lower Than $2,000 in Less Than	Parishes Arranged in 4 Quartiles (16 parishes in each Quartile), from Highest to Lowest Index of the Forces of Mortality.			
	1st Quartile (Parishes with Highest Indices of the Force of Mortality)	2nd Quartile	3rd Quartile	4th Quartile (Parishes with Lowest Indices of the Forces of Mortality)
50% of Families	1 parish	1 parish	2 parishes	5 parishes
55% of Families	1 parish	4 parishes	4 parishes	8 parishes
60% of Families	2 parishes	6 parishes	8 parishes	11 parishes
65% of Families	3 parishes	8 parishes	10 parishes	12 parishes
70% of Families	4 parishes	12 parishes	12 parishes	13 parishes
75% of Families	10 parishes	15 parishes	14 parishes	15 parishes

It appears that, under the conditions prevailing in Louisiana, **the force of mortality is critically reduced where at least 65% of the families have median annual incomes of $2,000 or more,** since most of the parishes with lower forces of mortality are found among those with **less than 65%** of their families having annual incomes that are lower than $2,000.

TABLE 7
PARISHES IN LOUISIANA, CLASSIFIED INTO QUARTILES ACCORDING TO THEIR FORCE OF MORTALITY INDICES, AND GROUPED ACCORDING TO THE PERCENTAGE LEVEL OF DILAPIDATED HOUSES IN EACH PARISH, 1950.

Percentage of Dilapidated Houses in Each Parish is Less Than	Parishes Arranged in 4 Quartiles (16 parishes in each Quartile), from Highest to Lowest Index of the Forces of Mortality.			
	1st Quartile (Parishes with Highest Indices of the Forces of Mortality)	2nd Quartile	3rd Quartile	4th Quartile (Parishes with Lowest Indices of the Forces of Mortality)
20%	3 parishes	2 parishes	7 parishes	11 parishes
25%	4 parishes	7 parishes	11 parishes	13 parishes
30%	7 parishes	11 parishes	13 parishes	16 parishes
35%	10 parishes	13 parishes	14 parishes	16 parishes
40%	13 parishes	14 parishes	16 parishes	16 parishes
50%	14 parishes	16 parishes	16 parishes	16 parishes

It appears that the percentage of dilapidated houses in an area is a **fairly good correlating factor** with the force of mortality, i. e., the greater the dilapidation the greater the force of mortality. Most of the parishes with lower forces of mortality have less than 25% of their houses dilapidated.

TABLE 8
PARISHES IN LOUISIANA, CLASSIFIED INTO QUARTILES ACCORDING TO THEIR FORCES OF MORTALITY INDICES, AND GROUPED ACCORDING TO THE PERCENTAGE LEVEL OF HOUSES IN EACH PARISH HAVING PRIVATE TOILETS, BATHS, AND HOT OR COLD RUNNING WATER, 1950.

Percentage of Houses in Parishes with Adequate Sanitation is Less Than	Parishes Arranged in 4 Quartiles (16 Parishes in each Quartile), from Highest to Lowest Index of the Forces of Mortality.			
	1st Quartile (Parishes with Highest Indices of the Forces of Mortality)	2nd Quartile	3rd Quartile	4th Quartile (Parishes with Lowest Indices of the Forces of Mortality)
20%	8 parishes	5 parishes	3 parishes	1 parish
25%	12 parishes	6 parishes	4 parishes	3 parishes
30%	14 parishes	10 parishes	6 parishes	5 parishes
40%	15 parishes	13 parishes	13 parishes	10 parishes
50%	16 parishes	15 parishes	14 parishes	12 parishes

The proportion of houses in an area having private toilets, baths, and hot or cold running water appears to **correlate very well** with the force of mortality, i. e., the lower the percentage of houses having such facilities in an area, the greater the forces of mortality. Most of the Parishes with **higher forces of mortality** have adequate basic sanitary facilities in less than 30% of their houses.

TABLE 9
PARISHES IN LOUISIANA, CLASSIFIED INTO QUARTILES ACCORDING TO THEIR FORCE OF MORTALITY INDICES, AND GROUPED ACCORDING TO THE PERCENTAGE LEVEL OF NEGRO POPULATION IN EACH PARISH, 1950.

Parishes Having a Population Proportion of Less Than	Parishes Arranged in 4 Quartiles (16 parishes in each Quartile), from Highest to Lowest Index of the Forces of Mortality.			
	1st Quartile (Parishes with Highest Indices of the Forces of Mortality)	2nd Quartile	3rd Quartile	4th Quartile (Parishes with Lowest Indices of the Forces of Mortality)
20% Negroes	1 parish	2 parishes	4 parishes	4 parishes
25% Negroes	1 parish	5 parishes	6 parishes	7 parishes
30% Negroes	1 parish	6 parishes	8 parishes	10 parishes
35% Negroes	2 parishes	9 parishes	11 parishes	13 parishes
50% Negroes	7 parishes	14 parishes	15 parishes	16 parishes
65% Negroes	14 parishes	16 parishes	16 parishes	16 parishes

The proportion of the Negro population in a parish appears to **correlate very well** with the force of mortality. **The greater the proportion of Negro population in a parish, the more can be expected a high index of the force of mortality, and vice versa.** Since most of the parishes with lower forces of mortality are found to have **less than 35%** Negro population, this appears to be the **critical level** above which are found most of the parishes with higher forces of mortality.

TABLE 10
PARISHES IN LOUISIANA, CLASSIFIED INTO QUARTILES ACCORDING TO THEIR FORCE OF MORTALITY INDICES, AND GROUPED ACCORDING TO THE PERCENTAGE LEVEL OF RURAL POPULATION IN EACH PARISH, 1950.

Percentage of Rural Population in each Parish is Less Than	Parishes Arranged in 4 Quartiles (16 parishes in each Quartile), from Highest to Lowest Index of the Forces of Mortality.			
	1st Quartile (Parishes with Highest Indices of the Forces of Mortality)	2nd Quartile	3rd Quartile	4th Quartile (Parishes with Lowest Indices of the Forces of Mortality)
30%	0 parish	1 parish	1 parish	3 parishes
40%	1 parish	1 parish	1 parish	3 parishes
50%	1 parish	3 parishes	2 parishes	3 parishes
60%	2 parishes	4 parishes	5 parishes	5 parishes
70%	4 parishes	7 parishes	6 parishes	8 parishes
80%	8 parishes	10 parishes	9 parishes	14 parishes

There appears to be very **little indication** that **rurality** is correlated with the force of mortality, except possibly where the proportion of rural population is very high.

TABLE 11
PARISHES IN LOUISIANA WITH DECREASING POPULATIONS, CLASSIFIED IN THE QUARTILES TO WHICH THEY BELONG ACCORDING TO THEIR FORCE OF MORTALITY INDICES, AND GROUPED ACCORDING TO THE PERCENTAGE OF DECREASE IN POPULATION IN EACH PARISH, 1940 TO 1950.

Parishes with Decreasing Population, where the Decreases are Less Than	Parishes Arranged in 4 Quartiles (According to which each one With Decreasing Population Belong) from Highest to Lowest Index of the Forces of Mortality.			
	1st Quartile (Parishes with Highest Indices of the Forces of Mortality)	2nd Quartile	3rd Quartile	4th Quartile (Parishes with Lowest Indices of the Forces of Mortality)
5%	2 parishes	2 parishes	0 parishes	3 parishes
10%	7 parishes	4 parishes	2 parishes	3 parishes
15%	9 parishes	6 parishes	6 parishes	3 parishes
20%	10 parishes	7 parishes	6 parishes	4 parishes
25%	13 parishes	7 parishes	6 parishes	4 parishes
Total Parishes with Decreasing Population	13 parishes	7 parishes	6 parishes	4 parishes

There appears to be some evident correlation between the **trend of decreasing population** and that of **increasing force of mortality.** This is probably the influence of the rate of economic deterioration. The correlation begins to become evident where the decreases are greater than 5%. The number of parishes with decreasing population is highest in the 1st quartile and lowest in the 4th quartile, as would be expected.

TABLE 12
PARISHES IN LOUISIANA, CLASSIFIED INTO QUARTILES ACCORDING TO THEIR FORCE OF MORTALITY INDICES, AND GROUPED ACCORDING TO THE PERCENTAGE OF PEOPLE IN EACH PARISH IN THE AGE-GROUP OF 65 YEARS OR MORE, 1950.

Parish Population with a 65 years or Older Age-Group Composing Less Than	Parishes Arranged in 4 Quartiles (16 parishes in each Quartile), from Highest to Lowest Index of the Forces of Mortality.			
	1st Quartile (Parishes with Highest Indices of the Forces of Mortality)	2nd Quartile	3rd Quartile	4th Quartile (Parishes with Lowest Indices of the Forces of Mortality)
5% of the Population	0 parishes	1 parish	0 parish	4 parishes
6% of the Population	0 parishes	4 parishes	4 parishes	7 parishes
7% of the Population	4 parishes	7 parishes	7 parishes	12 parishes
8% of the Population	7 parishes	12 parishes	14 parishes	14 parishes
9% of the Population	14 parishes	15 parishes	15 parishes	16 parishes

The proportion of people in the age-group of 65 years or more appears to correlate with fair constancy to the force of mortality. **The greater the proportion of older people in an area, the more can be expected a high index of the force of mortality, and vice versa.** It appears that most of the parishes with lower forces of mortality have less than 7% of their populations in the older age-group, whereas most of the parishes with higher forces of mortality have more than 7% of their populations in the older age-group.

TABLE 13
PARISHES IN LOUISIANA, CLASSIFIED INTO QUARTILES ACCORDING TO THEIR FORCE OF MORTALITY INDICES, AND GROUPED ACCORDING TO THE SIZE OF THE POPULATION IN EACH PARISH, 1956.

Size of Population in each Parish is Less Than	Parishes Arranged in 4 Quartiles (16 Parishes in each Quartile), from Highest to Lowest Index of the Forces of Mortality.			
	1st Quartile (Parishes with Highest Indices of the Forces of Mortality)	2nd Quartile	3rd Quartile	4th Quartile (Parishes with Lowest Indices of the Forces of Mortality)
10,000	2 parishes	2 parishes	1 parish	0 parishes
20,000	10 parishes	6 parishes	6 parishes	7 parishes
30,000	13 parishes	8 parishes	10 parishes	9 parishes
40,000	15 parishes	12 parishes	10 parishes	11 parishes
50,000	15 parishes	14 parishes	12 parishes	13 parishes

There is **scarcely any indication** that **size of population** has any evident correlation to the force of mortality.

TABLE 14
PARISHES IN LOUISIANA, CLASSIFIED INTO QUARTILES ACCORDING TO THEIR FORCE OF MORTALITY INDICES, AND GROUPED ACCORDING TO THE PER CAPITA ASSESSED VALUATION IN EACH PARISH, 1956

Per Capita Assessed Valuation in each Parish is Less Than	Parishes Arranged in 4 Quartiles (16 Parishes in Each Quartile), from Highest to Lowest Index of the Forces of Mortality.			
	1st Quartile (Parishes with Highest Indices of the Forces of Mortality)	2nd Quartile	3rd Quartile	4th Quartile (Parishes with Lowest Indices of the Forces of Mortality)
$700	5 parishes	8 parishes	10 parishes	5 parishes
800	10 parishes	8 parishes	11 parishes	9 parishes
900	13 parishes	11 parishes	14 parishes	10 parishes
1,000	15 parishes	13 parishes	14 parishes	10 parishes

The Per Capita Assessed Valuation Does Not Appear as a Sensitive Correlating Factor to the Force of Mortality Under Conditions Prevailing in Louisiana.

TABLE 15
PARISHES IN LOUISIANA, CLASSIFIED INTO QUARTILES ACCORDING TO THEIR FORCE OF MORTALITY INDICES AND GROUPED ACCORDING TO THE PERCENT OF DELIVERIES IN HOSPITALS FOR EACH PARISH, 1950-1955 (6 YEARS)

Percent of Deliveries in Hospitals for Each Parish is Less Than	Parishes Arranged in 4 Quartiles (16 Parishes in each Quartile), from Highest to Lowest Index of the Forces of Mortality.			
	1st Quartile (Parishes with Highest Indices of the Forces of Mortality)	2nd Quartile	3rd Quartile	4th Quartile (Parishes with Lowest Indices of the Forces of Mortality)
40%	1 parish	0 parishes	0 parishes	0 parishes
50%	3 parishes	1 parish	0 parishes	0 parishes
60%	4 parishes	2 parishes	0 parishes	0 parishes
70%	9 parishes	2 parishes	1 parish	0 parishes
80%	13 parishes	4 parishes	3 parishes	1 parish
85%	14 parishes	7 parishes	6 parishes	3 parishes
90%	15 parishes	9 parishes	7 parishes	5 parishes
95%	16 parishes	13 parishes	11 parishes	11 parishes
98%	16 parishes	16 parishes	15 parishes	14 parishes

There appears to be a **strong correlation between the percent of deliveries in hospitals** and the force of mortality. The higher the percentage of deliveries in hospitals the lower the force of mortality. It appears that the **critical level** is between **85% and 90%** deliveries in hospitals. Below that level most of the parishes with the higher force of mortality are found.

TABLE 16
PARISHES IN LOUISIANA, CLASSIFIED INTO QUARTILES ACCORDING TO THEIR FORCE OF MORTALITY INDICES, AND GROUPED ACCORDING TO THE PERCENT OF ALL DELIVERIES ATTENDED BY PHYSICIANS IN HOSPITALS AND AT HOME.

Percent of Deliveries Attended by Physicians in Each Parish is Less Than	Parishes Arranged in 4 Quartiles (16 Parishes in each Quartile), from Highest to Lowest Index of the Forces of Mortality.			
	1st Quartile (Parishes with Highest Indices of the Forces of Mortality)	2nd Quartile	3rd Quartile	4th Quartile (Parishes with Lowest Indices of the Forces of Mortality)
50%	2 parishes	0 parishes	0 parishes	0 parishes
60%	4 parishes	0 parishes	0 parishes	0 parishes
70%	6 parishes	1 parishes	0 parishes	0 parishes
80%	10 parishes	2 parishes	2 parishes	0 parishes
90%	13 parishes	7 parishes	6 parishes	2 parishes
95%	15 parishes	12 parishes	8 parishes	9 parishes
100%	16 parishes	16 parishes	16 parishes	16 parishes

The percentage of all deliveries attended by physicians (and, therefore, as a corollary, the percentage of deliveries not attended by physicians) appears to be a **fairly evident correlating** factor to the force of mortality. It appears that, when parishes have more than 90% of deliveries attended by physicians, they strongly tend to fall among the parishes with lower forces of mortality.

TABLE 17
SOCIO-MEDICAL FACTORS
RELATED TO THE CUMULATIVE FORCE OF MORTALITY IN EACH PARISH IN LOUISIANA

Parishes Listed According to their Cumulative Force of Mortality Indices, From Highest to Lowest Index		% Deliveries in all Hospitals 1950-1955 (6 years average)	% Deliveries in State Hospitals, 1955	% Deliveries Attended by Physicians, 1950-1955 (6 year average)	% Deliveries **not** Attended by Physicians, 1950-1955 (6 year average)	% Deliveries Attended by Physicians **not** including Deliveries in State Hospitals 1950-1955	Hospital Beds and Bassinets—1956*	
							Number	Population per Bed
See Tables 2 and 3		See Table 15		See Table 16		See Table 18		See Table 19
01	Madison	42	12	43	57	31	32	526
02	Red River	77	41	83	17	42	40	244
03	Richland	78	39	90	10	51	60	422
04	West Feliciana	41	22	45	55	20		
05	East Carroll	29	7	50	50	43		
06	Tensas	53	4	55	45	50	38	303
07	Iberville	67	**	72	28	72	44	594
08	Concordia	71	**	71	29	70	34	420
09	DeSoto	75	41	68	32	27	95	208
10	Morehouse	66	24	75	25	51	80	435
11	Pointe Coupee	63	18	71	29	53	46	445
12	Bienville	81	30	84	16	54	25	644
13	St. James	66	32	82	18	50	50	291
14	Natchitoches	61	21	68	32	46	36	1,010
15	Ouachita	94	40	97	3	57	640	132
16	Beauregard	89	3	93	7	90	68	288
17	Webster	90	26	94	6	68	85	435
18	Vernon	92	7	93	7	84	79	239
19	Iberia	89	31	96	4	65	99	423
20	LaSalle	97	13	97	3	84	70	197
21	Washington	92	50	94	6	44	214	191
22	St. Mary	74	12	85	15	73	111	348
23	East Feliciana	57	38	61	39	23	25	793
24	Caddo	97	42	98	2	56	1,678	115
25	St. Martin	89	47	91	9	44	28	940
26	St. Helena	93	68	94	6	23		
27	Caldwell	96	41	98	2	57	23	400
28	Sabine	77	13	79	21	66	110	174
29	Union	80	43	85	15	42	33	546
30	Evangeline	82	25	85	15	60	160	202
31	Claiborne	44	25	83	17	58	67	329
32	St. Landry	80	43	84	16	41	69	1,201
33	West Carroll	70	24	82	18	58	21	762
34	Orleans	99	43	99+	−1	57	5,330	116
35	Grant	96	40	98	2	58		
36	Franklin	67	20	70	30	50	70	393
37	Tangipahoa	95	65	97	3	32	192	302
38	Jackson	93	60	95	5	35	50	279
39	Cameron	92	**	98	2	98		
40	Livingston	91	43	96	4	53		
41	West Baton Rouge	70	20	77	23	57		
42	Lincoln	83	22	84	16	62	64	413
43	Ascension	81	26	87	13	61	53	436
44	Terrebonne	92	24	94	6	70	124	387
45	Rapides	96	34	97	3	63	782	130
46	Acadia	86	34	90	10	56	133	357
47	Assumption	82	22	88	12	66	55	290
48	Lafayette	95	44	97	3	53	587	113
49	St. Bernard	99	23	99+	−1	77		
50	St. Tammany	90	47	94	6	47	38	765
51	Avoyelles	76	35	82	18	46	90	414
52	Allen	94	10	96	4	86	146	135
53	St. John	88	58	95	5	37		
54	Winn	91	19	92	8	71	63	248
55	Lafourche	85	14	91	9	77	102	436
56	Calcasieu	92	3	93	7	90	446	247
57	Vermilion	96	22	97	3	75	122	299
58	Plaquemines	90	27	94	6	67	19	813
59	Jefferson Davis	83	16	90	10	74	44	628
60	St. Charles	96	32	99	1	67		
61	Catahoula	80	11	81	19	70	29	348
62	Bossier	96	26	96	4	70		
63	East Baton Rouge	90	18	91	9	73	563	359
64	Jefferson	98	24	99+	−1	76	326	421
	Total			92	8	60	13,588	212

* In general hospitals, and children and maternity hospitals open to the general public.
** Figure is very small.

TABLE 17—(Continued)
SOCIO-MEDICAL FACTORS RELATED TO THE CUMULATIVE FORCE OF MORTALITY IN EACH PARISH IN LOUISIANA

Parishes listed According to their Cumulative Force of Mortality Indices, From Highest to Lowest Index		Physicians 1956		Median School years completed (25 years and over)		Live Births in State Hospitals 1953-1955**	
		Number	Population per Physician	Male	Female	Number	% Births in each Parish
See Tables 2 and 3			See Table 20	See Table 23			See Table 18
01	Madison	7	2,404	4.9	5.8	67	12%
02	Red River	3	3,253	5.1	6.1	123	41%
03	Richland	15	1,688	6.0	6.8	342	39%
04	West Feliciana	2	4,600	5.7	5.2	63	25%
05	East Carroll	6	2,433	5.2	5.6	38	7%
06	Tensas	5	2,233	5.0	5.8	20	5%
07	Iberville	15	1,743	5.1	5.5	5	-1%
08	Concordia	8	1,787	5.7	6.5	7	1%
09	DeSoto	11	1,797	5.6	6.9	277	41%
10	Morehouse	16	2,177	6.1	6.9	273	24%
11	Pointe Coupee	4	5,123	4.3	4.6	115	18%
12	Bienville	6	2,680	6.7	7.6	127	30%
13	St. James	9	1,616	4.8	5.9	162	32%
14	Natchitoches	15	2,424	5.4	6.4	214	22%
15	Ouachita	94	898	8.3	8.7	992	40%
16	Beauregard	8	2,449	7.2	8.1	18	3%
17	Webster	17	2,175	7.9	8.3	271	26%
18	Vernon	7	5,203	7.5	7.9	61	9%
19	Iberia	32	1,308	5.5	6.2	393	31%
20	LaSalle	8	1,727	7.3	8.5	46	13%
21	Washington	28	1,458	7.4	8.2	604	50%
22	St. Mary	18	2,144	5.3	5.9	141	12%
23	East Feliciana	18	1,100	5.4	7.0	165	38%
24	Caddo	303	637	9.0	9.5	2,542	42%
25	St. Martin	11	2,394	6.3	3.8	407	47%
26	St. Helena	1	8,683	5.7	7.9	133	71%
27	Caldwell	4	2,300	6.9	7.8	96	41%
28	Sabine	10	1,919	6.3	7.3	63	13%
29	Union	10	1,802	7.0	7.8	184	43%
30	Evangeline	8	4,042	4.2	4.7	211	25%
31	Claiborne	15	1,471	7.2	8.0	128	25%
32	St. Landry	40	2,071	4.2	4.7	1,068	43%
33	West Carroll	4	3,999	6.5	7.6	107	24%
34	Orleans	1,580	391	8.6	8.6	7,053	43%
35	Grant	3	4,406	7.1	7.5	135	40%
36	Franklin	14	1,964	5.7	6.7	178	20%
37	Tangipahoa	31	1,872	6.4	7.4	1,105	65%
38	Jackson	11	1,268	7.4	8.4	226	60%
39	Cameron	5	1,129	5.8	5.9		
40	Livingston	5	4,294	6.9	7.7	237	43%
41	West Baton Rouge	3	4,013	5.3	6.0	68	20%
42	Lincoln	20	1,320	8.5	9.6	135	22%
43	Ascension	8	2,890	5.9	6.4	179	26%
44	Terrebonne	23	2,086	5.1	5.8	384	24%
45	Rapides	124	818	7.2	7.9	933	34%
46	Acadia	32	1,486	5.3	5.5	489	34%
47	Assumption	8	2,061	3.9	4.6	109	22%
48	Lafayette	85	781	6.4	6.6	862	44%
49	St. Bernard	4	3,368	7.1	7.3	131	23%
50	St. Tammany	33	881	7.1	7.8	383	47%
51	Avoyelles	18	2,070	5.8	6.4	369	36%
52	Allen	10	1,965	6.8	7.0	58	10%
53	St. John	6	2,487	5.1	5.8	301	58%
54	Winn	6	2,602	6.9	7.9	74	21%
55	Lafourche	34	1,307	4.4	5.1	197	14%
56	Calcasieu	98	1,125	8.0	8.3	122	3%
57	Vermilion	20	1,821	4.3	4.5	209	22%
58	Plaquemines	7	2,205	6.4	6.6	146	27%
59	Jefferson Davis	18	1,534	5.7	6.1	135	16%
60	St. Charles	10	1,412	6.6	6.8	167	32%
61	Catahoula	3	3,365	6.2	6.5	39	11%
62	Bossier	13	3,423	8.8	8.9	433	26%
63	East Baton Rouge	233	866	9.7	10.0	964	18%
64	Jefferson	62	2,214	8.3	8.5	989	24%
	Total	3,285	878			26,273	31%

** Live Births in all State General Hospitals is for the calendar year of 1955, except for Charity Hospital, New Orleans. For the latter, the data is for fiscal year of 1953-1954.

TABLE 18
PARISHES IN LOUISIANA, CLASSIFIED INTO QUARTILES ACCORDING TO THEIR FORCE OF MORTALITY INDICES, AND GROUPED ACCORDING TO THE PERCENT OF DELIVERIES ATTENDED BY PHYSICIANS, **NOT** INCLUDING DELIVERIES IN STATE HOSPITALS

% of Deliveries Attended by Physicians (not including state hospitals) for each Parish is Less Than	Parishes Arranged in 4 Quartiles (16 Parishes in Each Quartile), from Highest to Lowest Index of the Forces of Mortality.			
	1st Quartile (Parishes with Highest Indices of the Forces of Mortality)	2nd Quartile	3rd Quartile	4th Quartile (Parishes with Lowest Indices of the Forces of Mortality)
30%	2 parishes	2 parishes	0 parishes	0 parishes
40%	3 parishes	2 parishes	2 parishes	1 parish
50%	6 parishes	6 parishes	2 parishes	3 parishes
60%	13 parishes	9 parishes	10 parishes	3 parishes
70%	13 parishes	13 parishes	14 parishes	5 parishes
80%	15 parishes	14 parishes	15 parishes	14 parishes
90%	15 parishes	16 parishes	15 parishes	15 parishes

There appears to be only a **slight indication of correlation between the percentage of all deliveries (in hospitals and at home, except those in State Hospitals) attended by physicians and the force of mortality.** When State Hospitals are included, as shown in Tables 15 and 16, a strong correlation between medical care and the force of mortality is manifested. Therefore, it may be assumed that the State Hospital system adds enough weight to the medical efforts in the state to influence effectively the lowering of the force of mortality.

TABLE 19
PARISHES IN LOUISIANA, CLASSIFIED INTO QUARTILES ACCORDING TO THEIR FORCE OF MORTALITY INDICES, AND GROUPED ACCORDING TO THE POPULATION PER HOSPITAL BED IN EACH PARISH, 1956.

Population per Hospital Bed in Each Parish is Less Than	Parishes Arranged in 4 Quartiles (16 Parishes in each Quartile), from Highest to Lowest Index of the Forces of Mortality.			
	1st Quartile (Parishes with Highest Indices of the Forces of Mortality)	2nd Quartile	3rd Quartile	4th Quartile (Parishes with Lowest Indices of the Forces of Mortality)
200	1 parish	4 parishes	3 parishes	1 parish
300	5 parishes	6 parishes	5 parishes	4 parishes
400	6 parishes	8 parishes	9 parishes	6 parishes
500	10 parishes	11 parishes	11 parishes	9 parishes
600	12 parishes	12 parishes	11 parishes	9 parishes
Not listed as having hospitals	2 parishes	1 parish	4 parishes	4 parishes

The number of the population per hospital bed does **not** appear as an **evident correlating factor** to the force of mortality under conditions prevailing in Louisiana. This does not mean that the hospital beds-population ratio is not an important health index in comparing different countries or large areas within a country. It does not appear to be a sensitive factor in comparing such small interrelated areas as parishes under present conditions in Louisiana.

TABLE 20
PARISHES IN LOUISIANA, CLASSIFIED INTO QUARTILES ACCORDING TO THEIR FORCE OF MORTALITY INDICES, AND GROUPED ACCORDING TO THE POPULATION PER PHYSICIAN IN EACH PARISH, 1956

Population per Physician in Each Parish is Less Than	Parishes Arranged in 4 Quartiles (16 Parishes in Each Quartile), from Highest to Lowest Index of the Forces of Mortality.			
	1st Quartile (Parishes with Highest Indices of the Forces of Mortality)	2nd Quartile	3rd Quartile	4th Quartile (Parishes with Lowest Indices of the Forces of Mortality)
1,500	1 parish	5 parishes	7 parishes	5 parishes
2,000	6 parishes	8 parishes	9 parishes	8 parishes
2,250	8 parishes	11 parishes	11 parishes	11 parishes
2,500	12 parishes	13 parishes	11 parishes	12 parishes
3,000	13 parishes	13 parishes	12 parishes	13 parishes

The number of the population per physician does **not** appear as **a sensitive correlating factor** to the force of mortality under conditions prevailing in Louisiana. There is, however, an indication that, under favorable economic conditions, and under the conditions now existing in Louisiana, an area tends to have a lower force of mortality where the ratio of physician to population is less than 1:2,250, since the majority of parishes with the lower forces of mortality have less than 2,250 persons per physician.

TABLE 21

POSITION OF EACH PARISH ACCORDING TO VARIOUS SOCIO-ECONOMIC AND SOCIO-MEDICAL FACTORS THAT EVIDENTLY APPEAR TO CORRELATE IN LOUISIANA WITH THE CUMULATIVE FORCE OF MORTALITY (SEE TABLES 8 AND 9), AND THE CUMULATIVE HEALTY FORCE (INDEX NUMBER) OF EACH PARISH.

	Parishes Arranged in the order of their **Cumulative Force of Mortality** from **Highest to Lowest**	Position Number: the **Lower the Number**, the **Lower the Position** of the Parish for Each Factor.					
		Median Income of Families and Unrelated Individuals 1950	Indices* of Poor Housing 1950	Proportion of Negro Population	Proportion of Deliveries in Hospitals, 1950-1955	Proportion of Deliveries **not** Attended Physicians, 1950-1955	Cumulative Health Forces: Index Number**
01	Madison	4	3	3	3	1	2.8
92	Red River	6	7	11	19	19	12.4
03	Richland	22	9	20	21	29	20.2
04	West Feliciana	11	4	1	2	2	4.0
05	East Carroll	1	13	4	1	3	4.4
06	Tensas	2	2	2	5	4	3.0
07	Iberville	31	18	15	11	11	17.2
08	Concordia	7	41	5	15	9	15.4
09	DeSoto	15	25	6	17	6	13.8
10	Morehouse	37	29	16	9	12	20.6
11	Pointe Coupee	14	11	7	8	10	10.0
12	Bienville	27	8	14	25	21	19.0
13	St. James	13	16	12	10	16	13.4
14	Natchitoches	3	12	17	7	7	9.2
15	Ouachita	57	58	34	50	51	50.0
16	Beauregard	39	51	56	34	37	43.4
17	Webster	54	49	27	37	39	41.2
18	Vernon	10	28	62	43	36	35.8
19	Iberia	50	50	36	35	47	43.6
20	LaSalle	40	52	63	60	52	53.4
21	Washington	44	37	38	44	40	40.6
22	St. Mary	49	31	23	16	24	28.6
23	East Feliciana	5	10	49	6	5	15.0
24	Caddo	59	57	24	61	57	51.6
25	St. Martin	29	32	25	36	32	30.8
26	St. Helena	8	1	9	48	41	21.4
27	Caldwell	30	14	42	54	58	39.6
28	Sabine	20	15	53	20	14	24.4
29	Union	36	6	31	22	26	24.2
30	Evangeline	25	33	50	27	25	32.0
31	Claiborne	35	22	10	4	20	18.2
32	St. Landry	24	24	18	23	22	22.2
33	West Carroll	9	19	55	13	17	22.6
34	Orleans	61	63	37	63	62	57.2
35	Grant	17	23	47	55	59	40.2
36	Franklin	23	5	26	12	8	14.8
37	Tangipahoa	18	21	39	52	53	36.6
38	Jackson	51	48	40	49	45	46.6
39	Cameron	58	43	64	45	60	54.0
40	Livingston	42	35	58	41	48	44.8
41	West Baton Rouge	33	26	8	14	13	18.8
42	Lincoln	19	38	21	29	23	26.0
43	Ascension	32	30	28	26	27	28.6
44	Terrebonne	52	47	46	46	42	46.6
45	Rapides	46	56	32	56	55	49.0
46	Acadia	38	44	54	32	30	39.6
47	Assumption	16	20	19	28	28	22.2
48	Lafayette	45	59	44	53	54	51.0
49	St. Bernard	56	55	59	64	63	59.4
50	St. Tammany	34	60	41	38	43	43.2
51	Avoyelles	21	17	45	18	18	23.8
52	Allen	41	40	48	51	49	45.8
53	St. John	47	45	13	33	46	36.8
54	Winn	28	27	43	42	35	35.0
55	Lafourche	55	46	60	31	33	45.0
56	Calcasieu	63	61	51	47	38	52.0
57	Vermilion	26	39	61	57	56	47.8
58	Plaquemines	60	36	22	39	44	40.2
59	Jefferson Davis	43	54	52	30	31	42.0
60	St. Charles	53	53	35	58	61	52.0
61	Catahoula	12	34	29	24	15	22.8
62	Bossier	48	42	30	59	50	45.8
63	East Baton Rouge	62	64	33	40	34	46.6
64	Jefferson	64	62	57	62	64	61.8

* These index numbers represent a combination of the proportion of dilapidated houses and houses with private toilets, baths, and hot or cold running water in each parish. The smaller the index number, the worse the housing condition.

** Index Number is calculated by averaging the position numbers of each parish, then giving each average a position number from 1 to 64, i. e., from lowest to highest Cumulative Health Forces.

TABLE 22
COMPARISION OF THE POSITION OF EACH PARISH ACCORDING TO ITS CUMULATIVE FORCE OF HEALTH AND ITS CUMULATIVE FORCE OF MORTALITY, AND KEY INDICATING WHETHER HEALTH IS BETTER OR WORSE THAN EXPECTED.

Parishes Arranged in the Order of Their Cumulative **Force** of **Health** Indices from **Lowest to Highest**	The **Number** Designating the **Position** of Each Parish According to its Cumulative **Force of Health**; the lower the Number, the Weaker the Force of Health	The **Number** Designating the **Position** of Each Parish According to its Cumulative **Force of Mortality**; the Lower the Number, the Stronger the Force of Mortality	Health of Parish appears **WORSE** than Expected*	Health of Parish appears **BETTER** than Expected*
Madison	1	1		
Tensas	2	6		
West Feliciana	3	4		
East Carroll	4	5		
Natchitoches	5	14		
Pointe Coupee	6	11		
Red River	7	2		
St. James	8	13		
DeSoto	9	9		
Franklin	10	36		x
East Feliciana	11	23		o
Concordia	12	8		
Iberville	13	7		
Claiborne	14	31		x
West Baton Rouge	15	41		x
Bienville	16	12		
Richland	17	3	o	
Morehouse	18	10		
St. Helena	19	26		
St. Landry	20	32		o
Assumption	21	47		x
West Carroll	22	33		o
Catahoula	23	61		x
Avoyelles	24	51		x
Union	25	29		
Sabine	26	28		
Lincoln	27	42		o
St. Mary	28	22		
Ascension	29	43		o
St. Martin	30	25		
Evangeline	31	30		
Winn	32	54		x
Vernon	33	18	o	
Tangipahoa	34	37		
Acadia	35	46		o
St. John	36	53		x
Caldwell	37	27	o	
Grant	38	35		
Plaquemines	39	58		x
Washington	40	21	x	
Webster	41	17	x	
Jefferson Davis	42	59		x
St. Tammany	43	50		
Beauregard	44	16	x	
Iberia	45	19	x	
Livingston	46	40		
Lafourche	47	55		
Allen	48	52		
Bossier	49	62		o
Jackson	50	38	o	
Terrebonne	51	44		
East Baton Rouge	52	63		o
Vermilion	53	57		
Rapides	54	45		
Ouachita	55	15	x	
Lafayette	56	48		
Caddo	57	24	x	
Calcasieu	58	56		
St. Charles	59	60		
LaSalle	60	20	x	
Cameron	61	39	x	
Orleans	62	34	x	
St. Bernard	63	49	o	
Jefferson	64	64		

*x Stands for a **positive indication** that the Health and Mortality Forces did not correlate, i. e., the difference of position between the two was 16 or more intervals (a quartile or more).

o Stands for a **suspected indication** that the Health and Mortality Forces did not correlate, i. e., the difference of position between the two was between 10 and 16 intervals.

TABLE 23
PARISHES IN LOUISIANA, CLASSIFIED INTO QUARTILES ACCORDING TO THEIR FORCE OF MORTALITY INDICES, AND GROUPED ACCORDING TO THE MEDIAN SCHOOL YEARS COMPLETED IN THE MALE AND FEMALE POPULATION (25 YEARS AND OVER) IN EACH PARISH

Median School Years Completed in Each Parish is Less Than	Parishes Arranged in 4 Quartiles (16 Parishes in each Quartile), from Highest to Lowest Index of the Forces of Mortality.							
	1st Quartile (Parishes with Highest Indices of the Forces of Mortality)		2nd Quartile		3rd Quartile		4th Quartile (Parishes with Lowest Indices of the Forces of Mortality)	
	Male	Female	Male	Female	Male	Female	Male	Female
4.0 years	0 Par.	0 Par.	0 Par.	1 Par.	1 Par.	0 Par.	0 Par.	0 Par.
5.0 years	3 Par.	1 Par.	2 Par.	3 Par.	1 Par.	1 Par.	2 Par.	1 Par.
6.0 years	11 Par.	7 Par.	6 Par.	4 Par.	7 Par.	4 Par.	5 Par.	3 Par.
7.0 years	14 Par.	13 Par.	9 Par.	5 Par.	11 Par.	8 Par.	10 Par.	8 Par.
8.0 years	15 Par.	14 Par.	15 Par.	11 Par.	14 Par.	13 Par	12 Par.	12 Par.
9.0 years	16 Par.	16 Par.	15 Par.	15 Par.	16 Par.	15 Par.	15 Par.	15 Par.
10.0 years	16 Par.	16 Par.	16 Par.	16 Par.	16 Par.	16 Par.	16 Par.	15 Par.

There **scarcely appears to be any correlation** between the **median school years completed** (in the population of 25 years of age and over) and the force of mortality under the conditions prevailing in Louisiana.

public health programs, the size and nature of local budgets, local financial participation, etc., on the other hand, are yet to be studied. The pinpointing of problem parishes will have to be followed up by detailed intensive studies and evaluations in such individual parishes.

The study has, however, revealed pertinent interrelations between particular socio-economic forces and the forces of health and mortality which state and local governments could use in reappraising and redirecting certain of their efforts, in a more purposeful manner, for bettering those conditions which appear to support the forces of health.

To what extent can the force of official public health programs, well conceived and well managed, augment the health forces in a community where other socio-economic factors remain more or less constant? This question has been asked many times, and many answers have been given. The difficulty in answering this question reposes in the fact that the force of public health is so intimately a part of other socio-economic forces. Nevertheless, it is a challenge to the system of public health in Louisiana to demonstrate to what extent a well directed pinpointing program can reduce the mortality forces in those parishes which are preventing Louisiana from rising above the average level of health in the United States.

—o—

OPTIC AND RETROBULBAR NEURITIS

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With the very extensive work and the voluminous literature written on optic and retrobulbar neuritis, this condition remains an enigma, and a very controversial topic, both from a standpoint of classification as to type and position, and from an etiological standpoint.

Retrobulbar neuritis has been very well explained by Weill and Duke-Elder and quoted by many as "That disease in which neither the patient nor the physician sees anything". For the most part this is true.

CLASSIFICATION

There are several questions that have repeatedly arisen in my mind concerning this condition which have not, in all my review of the literature, been satisfactorily explained. From a purely technical point of view, one of the major causes now considered is not a neuritis at all in the true sense of the word, but a degener-

* Presented at the Seventy-seventh Annual Meeting of the Louisiana State Medical Society, May 7, 1957, New Orleans.

ative process possibly initiated by tissue infections. I think of allergic responses in the nerve causing islands of demyelinization. The demyelinating diseases, with multiple sclerosis in particular, I place in this category.

Then too, there are almost as many differences of opinion as to types as there are writers of the disease. The most common classification is that of position—being namely papillitis, optic neuritis, retrobulbar neuritis, and so on. The fault with this classification, I find, is that the retina, except for neuroretinitis, and cerebral cortex is excluded. In addition to this, I find that no one attempts to determine where a papillitis stops and an optic neuritis begins, or where this ends, and a retrobulbar neuritis begins and ends from an anatomical standpoint.

Many will take issue with me on my contention that all afflictions from retinitis to inflammation of the visual cortex should be called simply *optic neuritis* for the reason that this term is too generalized. The fact remains, however, that these, with the intermittent pathways, are part of the optic nerve system.

To soften the disagreement somewhat, I will exclude the retina in itself in the classification, but not in its effect on the nerve itself. This I intend to return to later as a cause of optic neuritis associated with chorioretinitis and uveitis in general.

If we accept the more or less accepted classification, we would begin where the retinal elements converge on the nerve head and terminate at about the level of the lateral geniculate body, leaving the entire pathway within the retina and brain to other classification.

There are certain findings which are described by some writers, that to me are not adequately explained. For example, "Why is the enlarged blind spot, described in conjunction with a central scotoma, found in optic neuritis?" It is hard for me to explain, but I have found it to happen in a few of my cases.

DIAGNOSIS

From a clinical point of view, optic neuritis is sometimes not too difficult to diagnose. Papillitis and neuro-retinitis probably offer the most concern, due to the fact that it must be differentiated from papilledema due to increased intracranial pressure. This is a problem facing both the general practitioner and the ophthalmologist. Actually, in the severe papillitis the nerve head may be indistinguishable from a papilledema because there is interference with vascular control which is manifested by hemorrhages in the retina, and enlargement and tortuosity of the retinal veins. The resulting edema of the nerve head causes its indistinct margins. Usually, however, the nerve head has a pinker color in papillitis, and while the blind spot in this instance is usually enlarged, a central or caecocentral scotoma will propably also be present in the majority of these cases, but not all of them.

In optic neuritis, vision may be lost completely and remain unchanged for a while after which vision gradually recovers, but not always to normal. A residual optic atrophy may often occur.

Following a meningitis, optic neuritis may occur possibly as an extension of the disease process along the meninges of the nerve. Papillitis is also frequently found as a complication of uveitis. Paracentral scotomata indicating axial involvement without loss of central vision often occur in both conditions.

The retrobulbar form, even if the process stops a few milimeters behind the globe, will not be detected by the use of the ophthalmoscope. Walsh thinks that afflictions distal to the entrance of the central retinal vessels will cause ophthalmoscopic findings, while those proximal to its entrance will not.

Clinical findings will be a rather sudden onset of visual loss, either preceded by, or concomitant with pain on movement or pressure of the globe. Headaches, and at times malaise and nausea, frequently appear. A paradoxical pupillary reaction is

sometimes found, but this finding is not constant enough to be of diagnostic value. The process tends to be unilateral. The visual loss may vary from slight blurring to complete blindness. There is a definite predilection for the papillomacular bundle to be affected, which causes the central scotoma. Frequently in axial neuritis isolated nerve bundles may be involved, causing more than one scotoma which may change shape.

A little known independent axial vessel, termed the central optic nerve artery, arises from the ophthalmic artery early in its course and enters the nerve independent of the central retinal artery. This anastomoses with the arterial circle of Zinn and is designed to feed macular fibers. It also acts as a vasa vasorum for the central artery itself. There are variations of this vessel, but it is constantly found.

The maculopapular bundle, therefore, has a very limited blood supply in contrast to the rest of the nerve, supplied from the outer pial network which has a very rich blood supply. It is thought that this is the reason why the maculopapular bundle is so susceptible to any affliction of the nerve.

Walsh differentiates the types of optic neuritis as to the involvement of the papillomacular bundle, and states that interference with this occurs only in retrobulbar neuritis.

Types of optic neuritis are as follows:

1. Perineuritis
   a. Exudative—following interstitial leptomeningitis
2. Papillitis
3. Neuro-retinitis
4. Retrobulbar neuritis
   a. Axial neuritis
   b. Transverse neuritis
   c. Interstitial (periaxial) neuritis
5. Purulent — abscess of nerve. May progress to panophthalmitis. Rare.

ETIOLOGICAL FACTORS CAUSING OPTIC OR RETROBULBAR NEURITIS

1. *Intraocular inflammatory disturbances*—such as uveitis, especially posterior uveitis.

2. *Generalized inflammatory conditions within the skull and orbit*—such as sympathetic ophthalmia and meningitis secondary to syphilis, tuberculosis, influenza, mumps, malaria, measles, and other exanthematous diseases which at times cause a papillitis. This group usually causes a peripheral neuritis.

3. *Local infections* — such as of paranasal sinuses, teeth, tonsils and gastrointestinal or genitourinary tracts.

4. *Blood dyscrasias* and *vascular disturbances* — including pernicious anemia and myelogenous leukemia.

5. *Metabolic disturbances*—including diabetes, nutrition, lactation, pregnancy, and even menstruation.

6. *Systemic poisons*—such as digitalis, methyl alcohol, quinine, arsenic, lead, tobacco, and ethyl alcohol. Carroll lists at least 50 causes. Some toxic agents produce central visual defects, some peripheral, some mixed, and a few cause cortical blindness.

7. *Hereditary optic neuritis (Leber's Disease)*. May occur late. Rare.

8. *Allergies*. This category is important because there is a distinct possibility of localized neural tissue sensitization to bacterial and other toxins which cause an anaphylactic reaction, originating from other parts of the body. In this respect, nearly all of the above categories may have some allergic component. Virus infections play a prominent part in a portion of the above categories. In this category would be found general inflammatory conditions, especially the exanthemata.

9. *Certain central nervous system diseases*—such as multiple sclerosis, Devic's disease (neuromyelities optica), acute encephalopathy. The cause of these diseases is unknown though there are many theories. Many believe all are different manifestations of the same disease, though there is a great amount of evidence to the contrary.

10. *Nutritional*

11. *Etiology unknown*. Possibly this is the largest category, and certainly large enough to be embarrassing. It comprises about one-third of all cases with averages

varying from 56 per cent at Johns Hopkins to 40 per cent at the Mayo Clinic, and 30 per cent at the Eye Institute at New York.

After a period of time and with onset of other symptoms a diagnosis could be made. About half of young middle aged adults developed multiple sclerosis later.

12. *Vascular*

The most common is that of intra-ocular inflammation producing optic neuritis, which may be either a frank papillitis or axial involvement of the retrobulbar portion of the nerve. This is probably due to an extension of a periphlebitis of the retinal veins to the nerve in the retrobulbar type, and by direct toxins when a papillitis alone is found. It is certainly true that following severe cases of uveitis, if careful search is made on the tangent screen following such an attack, often small and sometimes ill defined paracentral scotomata will be found. These are overlooked in hastily performed field studies. I believe some degree of papillitis may be found in most severe cases of uveitis.

CASE REPORTS

A case in evidence is that of P. W., who exhibited a fulminating generalized granulomatous uveitis of undetermined origin in one eye, followed by occurrence later in the fellow eye. A papillitis was diagnosed due to enlarged blind spot alone, without a caecocentral defect. This subsided on foreign protein therapy and has not been found since.

A second illustrative case is that of Mr. H. O. F. This patient presented himself for examination with the complaint of blurred vision in the right eye. A generalized uveitis was found with some haziness of the vitreous, but no areas of chorioretinitis could be demonstrated. The disc margins were blurred and indistinct and the disc was

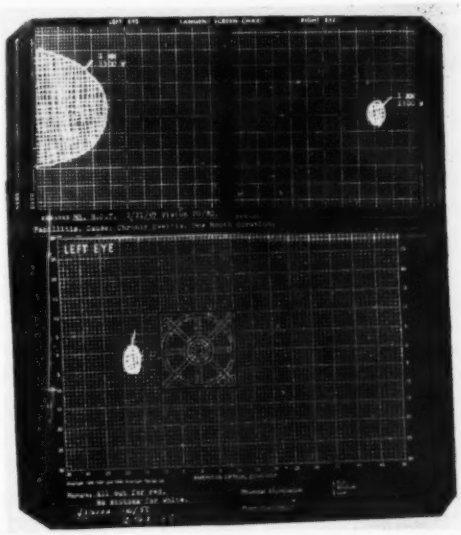

Figure 2.—(Case No. 2) H. O. F. Tangent fields before and after one week of cortisone therapy. Papillitis secondary to uveitis. Eventual complete recovery.

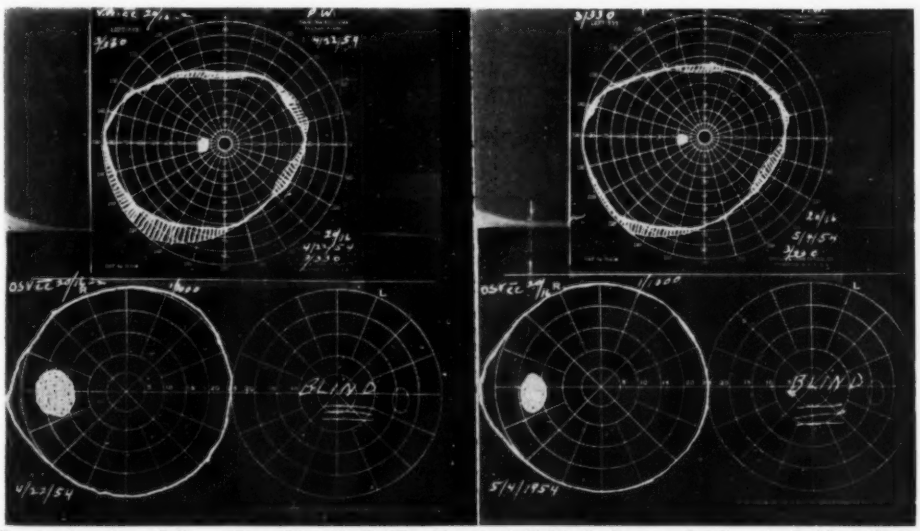

Figure 1.—A and B.—(Case No. 1) P. W. Tangent fields before and after typhoid antigen therapy. Enlarged blind spot due to papillitis secondary to uveitis.

slightly swollen. A small hemorrhage was found on the disc, and the blind spot was greatly enlarged. Vision was light perception. The opposite eye was normal, and general physical examination was completely negative.

The patient was treated with systemic cortisone, only, and one week later the disc appeared to be much more normal. The blind spot was normal, and the vision was 20/40. Red objects were indistinctly seen, but this patient is red blind. This is one of the pitfalls of color fields.

With so many different etiological factors, it is not so surprising that the literature is full of contradictory conclusions. Early it was thought that foci of infections were the predominant cause and the paranasal sinuses were given credit for the majority of the cases. Many a useless operation has been performed to effect a cure. It is true that the optic nerve is separated from the posterior ethmoid cells by a very thin plate of bone in some instances, and actually runs through the sphenoids with only its dural sheath as covering in a few. But, considering the large number of sinus infections with no optic nerve involvement, the pendulum naturally swept away from sinus disease as a primary cause.

It is my opinion, however, that foci of infection whether, sinuses, teeth, tonsils, or others do play some part in cases of optic neuritis in that they do aggravate or initiate cases which are actually of other origin and the foci should be eliminated when found. Woods and Walsh separately doubt that there is little to substantiate the neurotropic character of toxins from septic foci. And Walsh further states that allergic responses as regards optic neuritis do not occur but he still advocates removal of foci.

The second common cause of optic neuritis is that of undetermined origin, remembering that the demyelinating diseases must be placed along with this category in their earliest stages.

A case in point is that of Mrs. C. E. S., age 22. This patient complained of diminished vision in the left eye, beginning suddenly on July 1, 1956. She stated that she could not see anything when looking at it directly, but had some peripheral field vision. She then developed pain over the left eye, and looking from side to side was painful. There was no fever and no respiratory infection. Preceding the onset of this visual blurring, the patient stated that she was not feeling well for two or three days. However, she ascribed this to her menstrual period which was present at that time. She went to see her family physician who referred her for diagnosis and treatment. About two weeks later, two infected teeth were

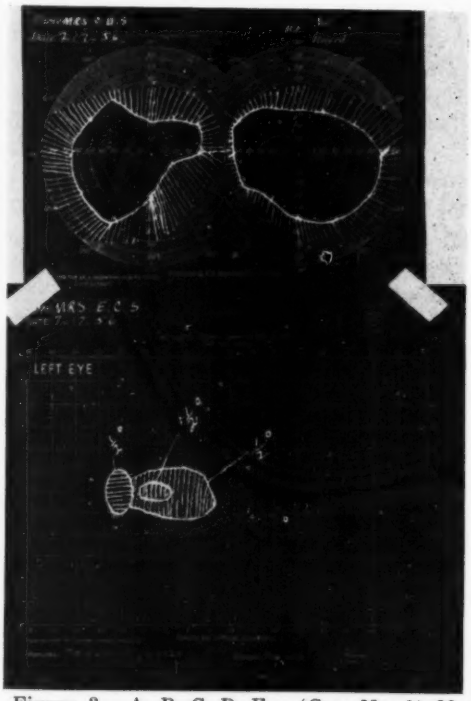

Figure 3.—A, B, C, D, E.—(Case No. 3) Mrs. C. E. S. Course of retrobulbar neuritis. Origin unknown. Note increased blind spot after tooth extraction and later multiple scotomata. Condition stationary.

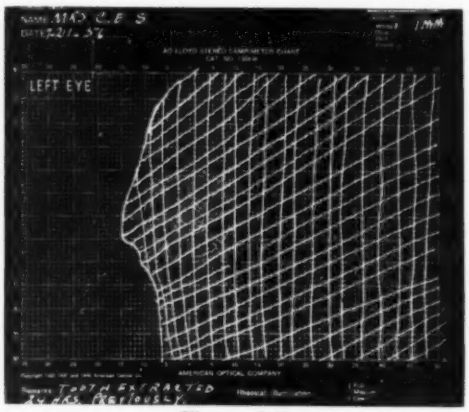

Figure 3-B

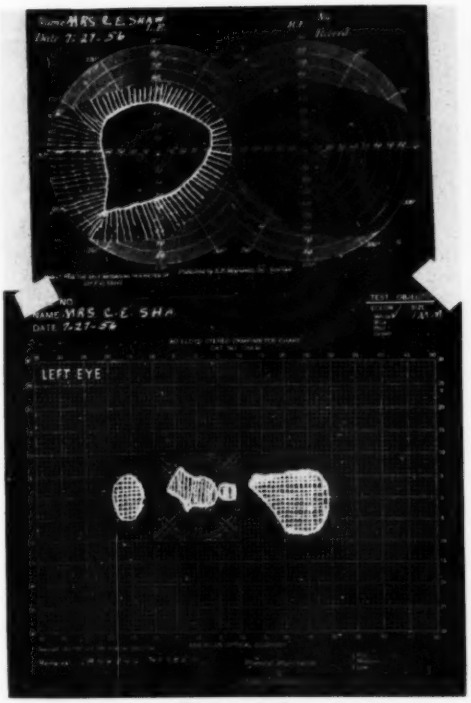

Figure 3-C

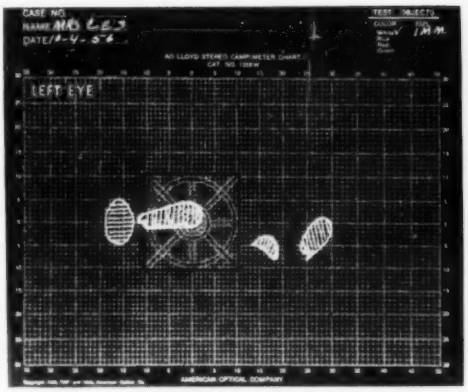

Figure 3-D

extracted and this seemed to cause a flare-up in her eye condition, which caused almost total blindness in the left eye. The pain around the eye subsided in about two weeks. The patient was treated with cortisone, Vitamin B_{12}, and Roniacol. She appeared to be improving, but a beginning optic atrophy was noted prior to neurological examination which she finally consented to, and resented very much. It should be noted that in August 1956, the patient had a feeling of numbness and tingling, involving the left arm and left face which lasted about one hour, but has not

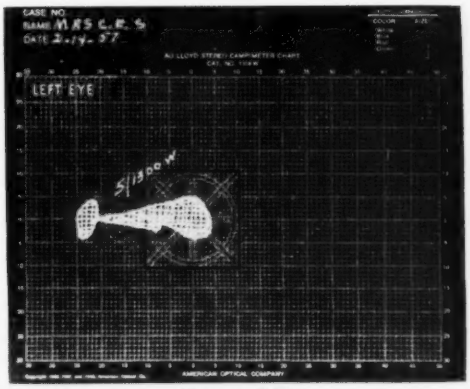

Figure 3-E

returned since. The patient also stated that over the past year and a half she has observed a quivering and jerky feeling, which affected different muscle groups all over her body. This occurred several times a day, but it did not last very long. She admitted to being quite nervous over the past five years. She is not prone to have headaches, except during her menstrual periods. Two years ago, the patient had a left oophorectomy performed supposedly for a tumor. Seven years ago, the patient had an appendectomy. The patient is married and has one child, age 5. General physical examination was normal in all respects.

The neurosurgeon's examination revealed normal pupillary reflexes, beginning optic atrophy, and a caecocentral scotoma. The survey of the function of the cranial nerves was negative. Cerebellar and coordination tests were well performed. She would not consent to spinal tap.

The Neurosurgeon's Comment: "This patient gives a good history for retrobulbar neuritis. The question here is mainly whether this is only the forerunner of a demyelinating disease, such as Devic's disease or possible multiple sclerosis. The short transient episodes of left arm and left face numbness, and possibly the quivering of different muscle groups, may indicate a diffuse process such as in multiple sclerosis. However, on objective examination today, there was absolutely no evidence to justify this diagnosis at the present time. I believe that it has to be kept in mind and the patient should be re-examined at six month intervals. For the present time, however, only a diagnosis of retrobulbar neuritis, involving the left eye, can be made. It is possible that once optic atrophy develops, that no further improvement of vision will occur."

The Summary of My Visual Field Findings: The scotoma has been caecocentral since the onset. There was an immediate flare-up of short duration with increase of the area of scotoma after the tooth was removed. The scotoma has fragmented at times and isolated nerve bundle defects

have been found, but now I believe a permanent defect will be found.

Optic neuritis from nutritional causes must be mentioned. They are usually bilateral and were frequently found among prisoners of war of the Japanese fed on rice diets. The tobacco-alcohol type may be a type of this, as these patients are frequently undernourished, though the toxic effects of tobacco and alcohol cannot be discounted. The tobacco-alcohol type is frequently found associated with an undiagnosed diabetes and the field defect is caecocentral with one or two dense nuclei.

Treatment consists of abstinence from tobacco and alcohol along with massive doses of vitamins especially the B complex.

The characteristic pathological picture of optic neuritis is perivascular lymphocytic infiltration with transudation of plasma leucocytes and red cells into the perivascular spaces.

In acute cases there is arteriolar spasm which limits the passage of oxygen to the capillaries, allowing a capillary anoxia and dilatation, causing them to become more permeable. This in turn, leads to edema and round cell infiltration. If this anoxia occurs for a sufficient length of time, necrosis and infarcts may occur.

In multiple sclerosis the pathological picture is somewhat the same with the demyelination of the axis cylinders with localized necrosis early and sclerotic placques later, followed by gliosis. Multiple sclerosis, while still of debatable origin, is thought to be an allergic reaction to neurotropic antigens originating within the nervous system, which in turn produce the recurrent anaphylactic reactions to sensitized portion throughout the nervous system. Actually the exact cause is unknown.

FINDINGS OF OPTIC NEURITIS

Visual Field Defects: Again a great variety of field defects may be found. The characteristic defect is a central or caecocentral scotoma. This scotoma may involve the blind spot, in which case the area of the blind spot may be enlarged. I doubt the actual occurrence of an enlarged blind spot in the absence of a caecocentral scotoma which involves this area, except in pure papillitis. An enlarged blind spot has been described concurrently with the caecocentral scotoma by a number of authors.

The scotoma is more pronounced for colored than white objects. And the scotoma for red is found to be greatest, and the first color lost. In chorioretinal disease blue is lost first.

The scotoma may be quite small and may be actually paracentral with the central vision remaining unaffected. In other cases, the scotoma may be complete. It may "break through" to the periphery at one point and the peripheral fields may be constricted. The scotoma may be hemianopic, or quadrantic, depending on the type of nerve involvement. There may be one or two dense nuclei in the scotoma, especially in the nutritional and tobacco-alcohol type.

The scotoma in optic neuritis is negative, while in chorioretinal disease it is positive and associated with macropsia, micropsia, or metamorphosia. The various scotomatous areas vary considerably with the area of neuritis, so that an area of neuritis at the chiasm would produce a different picture than one more anteriorly or posteriorly placed in the nerve. A chiasmal lesion may cause a homonymous, hemianopic quadrantic or bitemporal defect, while if placed further back, may tend to be more homonymous hemianopic. The shape of the scotomata for the two eyes, if bilateral defects are found, may be a localizing sign. The amount of incongruity would also be an important feature in locating the lesion. The scotomata would vary also as to whether the affliction of the nerve was peripheral or axial. Careful and serial field studies should be made in any case to chart the course of the disease.

Defects in light sense have been described but are not diagnostic.

Pupillary Changes: There are changes

from lack of response in complete blindness to sluggishness paralleling the degree of visual loss. The characteristic finding is that of constriction to light stimulus with dilatation following in the presence of the same stimulus and has been found to be of no real diagnostic value.

Changes in the Cerebrospinal Fluid: The spinal fluid is normal, except in multiple sclerosis, when the protein may be found to be increased, and the colloidal gold may show strong first zone changes. In cases secondary to meningitis, consistent findings are, of course, found.

Temporal Pallor of the Disc: This is a characteristic finding following optic neuritis. This is due to atrophy of papillomacular bundle which occupies this portion of the disc. However, temporal pallor is so frequently found in eyes with no other findings that it may be declared normal to a large extent. It is also found in deep cupping of the disc and high myopia. These factors must be kept in mind when temporal pallor of the disc is found.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis between papillitis and papilledema has been elaborated upon previously.

One must bear in mind central chorioretinitis which may be seen ophthalmoscopically. In the very early stages before retinal changes are found, the field for blue may be a differentiating point. It is interesting, however, that in quinidine poisoning the field for blue and red is reversed. Also, the image, size, and shape may be a differentiating point in early cases.

Intracranial tumors must be considered. In the presence of papilledema (and some observers state that some swelling of the nerve head is found in nearly all cases), subjective symptoms and other neurological and x-ray signs are diagnostic, and field studies may be only supporting data.

TREATMENT

In all acute forms the treatment is practically the same — ACTH and cortisone. Cortisone and ACTH are at least worth a trial, as any means to decrease the inflammatory process is in order. They are of no value in multiple sclerosis and may be of great general harm following meningitis of tuberculous origin. In general, treatment of optic neuritis is of little good. General supportive treatment, designed to increase the general health, is in order. B complex is at best psychogenic therapy as there is little to indicate that the B vitamins actually decrease the severity of the inflammation of the nerves. However, in nutritional cases massive doses are indicated. Vasodilators are widely used, though I doubt their general efficacy.

The time honored fever therapy may be safely employed even in the face of an old or recent tuberculosis. This is thought to be due to the fact that though the corticosteroids are increased in the blood stream during the reactions, the duration is not sufficient to produce harm to other structures. Fever therapy (killed typhoid bacilli or boiled milk or typhoid H antigen) may and often should be used in conjunction with ACTH and cortisone and the vasodilators. Antibiotics should be employed when an active focus or foci of infection are demonstrated, and I believe should always be used when surgery on a focus of infection is to be performed.

CONCLUSIONS

1. Optic and retrobulbar neuritis are caused by a multitude of agents.

2. The differential diagnosis is quite frequently difficult.

3. Visual fields are varied, and while diagnostic in some cases, require great skill in interpretation and can be only contributory data in a large number of cases. A central or caecocentral scotoma is characteristic.

4. The course is not always short and without sequellae.

5. Treatment for the most part is supportive, as the process will either resolve spontaneously or progress to atrophy, though every effort should be employed to ameliorate the symptoms. Corticosteroids and corticotropin alone, or in conjunction with foreign protein therapy, should be

used unless contraindicated by the patient's general condition. Massive vitamin therapy is indicated in nutritional cases.

6. The ophthalmoscopic picture must be considered along with other data.

7. This paper is incomplete because of the vastness of the information accumulated, and the time allotted for its presentation.

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ENCROACHMENT BY OPTOMETRISTS UPON THE FIELD OF MEDICINE

The practice of medicine should be done by physicians. Attempts by those not qualified to practice medicine are numerous. In some instances the efforts center around plain quackery. In others, there may be a desire to extend a technical procedure into a limited field of practice where only a physician should have direction. In recent years certain important groups in optometry have determined to gain legal sanctions to diagnose and treat ocular diseases and to perform ocular surgery. The partial success of these efforts on the part of optometrists, or at least certain individuals in their groups, and the character of the laws proposed are a cause for grave concern to all who uphold the standards and ethical principles of organized medicine.

In the field of federal legislation there have been three statutes concerning the field of optometry, and the first was an act in 1924 dealing with the practice of optometry in the District of Columbia. By definition and by specification the practice of optometry was to be limited to the use of technical methods and devices in the examination of the human eye for purposes of determining visual defects and the adaptation of lenses for aid and relief thereof. It prohibited medicine or surgery and prohibited prescriptions or treatment of the eyes. Another statute in this field contained in an amendment to the Social Security law was passed by the 81st Congress. This provides that in the determination of whether a person is blind for the purpose of receiving government aid, either a physician skilled in the diseases of the eye or an optometrist could make the official determination. Congress by enacting this statute authorized optometrists to make a determination which is ordinarily outside the scope of their practice. The same Congress, in 1949, provided for optometry sections in the Medical Service Corps of the Army and the Navy.

All forty-eight states have laws defining and regulating the practice of optometry. The use of drugs and surgery is forbidden in twenty-one. In seventeen additional states optometrists cannot use drugs. In the statutes of the last five years the optometric laws themselves do not reveal any trend towards widening the scope of practice, but other laws clearly do so. These are workmen's compensation laws, school laws, laws providing aid for the blind, and the anti-discrimination laws. Thirty-five states now permit optometrists to certify that a person is blind so that he may qualify for state financial

assistance. Four states have passed laws which provide optometrists are not to be discriminated against by state and local governments in the ocular field; and Florida additionally provides that optometrists' testimony is to be accepted as expert testimony in legal actions involving the human eye.

The aggressive attitude of the optometrists association is further shown by a statement of a past president: "We look upon vision care as a specialty in the broad health field, and optometry, incidentally is the only profession specially licensed to care for vision." Also, a resolution adopted at the annual congress of the American Optometric Association, at Seattle, in 1954, read in part as follows: "Resolved that it is the stated policy of the American Optometric Association in convention assembled that the field of visual care is the field of optometry and should be exclusively the field of optometry." A proposed optometric act for the state of Oklahoma would redefine optometry, extending it to cover all of ocular medicine except surgery, and deny to all except certain physicians the right to practice what is defined as optometry. This, if enacted, would have the effect of regulating medical practice by a nonmedical group outside of the Medical Practice Act.

In Louisiana, a proposed amendment to the optometry act would have regulated the physician in twenty-one provisions, thus amending to that extent the provisions of our Medical Practice Act.

The aims indicated by state legislation and statements such as these are not those of all optometrists. There are many who hold to the historical position of the refracting optician whose aim it was to affect only the light and not the eye, and to avoid attempts to penetrate the involved mysteries of medical practice.

The position of the ophthalmologists in this situation is one of considerable concern. The medical profession in general and ophthalmology in particular have encouraged the optometrist to make himself more competent in his field of nonmedical refraction, but believe that every individual should be referred to an ophthalmologist, who does not attain normal vision with glasses, or who has any eye complaint not relieved by glasses. The optometrist should not attempt to select individuals for referral to the ophthalmologist on the basis of the determination of the presence of disease. He is not qualified to make such diagnosis. Attempts by certain optometrists to arrange medical consultations for an individual requiring eye care, and at the same time maintain themselves in the position of directing that care, constitute a danger for the patient and for the physician. A disease process in the eye, which should be treated by an ophthalmologist, may advance while the eye is under optometric direction to the point at which proper therapy may not be effective.

The position of the American Medical Association during most of the thirty and more years that these matters have been before the House of Delegates has been that voluntary associations with optometrists are unethical.

The physician who prescribes cycloplegic and other drugs, so that the optometrist may then refract, may precipitate glaucoma in patients who have never had a previous attack. In such a situation, the physician would bear the brunt of legal action, since a malpractice suit against the optometrist would not apply.

From these considerations it is apparent that a serious struggle is in process. An aggressive group of optometrists wishes to extend their field, and presumably, exclude by legal means the ophthalmologist from the fitting of glasses. The position of the public, which in this instance and most others does not know what is good for it, is confused. The public does not know that the optometrist's function is to fit glasses to eyes that are not diseased. The position of the physicians is that further encroachment on the

practice of medicine by the optometrist should be prevented, and that the legal right of optometrists to determine blindness, for Social Security or other purposes, should be revoked. Physicians everywhere should be continuously watchful of the attempts to extend the field of optometry by legal means.

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ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

1958 ANNUAL MEETING

Have you paid your 1958 dues so that you will be eligible to attend the 1958 Annual Meeting? It is also necessary for dues to be paid in order for doctors to receive medical defense protection.

Have you made your hotel reservations? A communication was recently sent to each member of the Society in which was enclosed a card for use in making requests for accommodations. Be sure to take care of this matter at once. The meeting will be held at both the Captain Shreve and Washington-Youree Hotels.

Have you made request for scientific exhibit space? It is hoped that the exhibit will be an outstanding one and that many members will participate in this phase of the meeting. Recognition will be given the two exhibits selected for first and second place awards by a secret committee.

The scientific program is nearing completion and all indications are that many subjects of interest will be presented.

The cocktail party and dance scheduled for Tuesday, May 6 should be a gala social function and it is anticipated that it will be enjoyed by all; Jan Garber will furnish the music for this occasion.

Make your plans to attend all sessions possible and be sure to visit the technical exhibits as often as you can while at the meeting.

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Inactive

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Secretary: Dr. R. E. Dupre, Ville Platte

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RED RIVER PARISH MEDICAL SOCIETY
Inactive

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Sec-Treas: Dr. R. B. Van Horn, 115 Pearl, Minden

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Sec-Treas: Dr. Clarence E. Black, 918 4th Street, Gretna

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President: Dr. Harold M. Flory, New Iberia
Sec-Treas: Dr. Z. H. Bienvenu, 832 St. John Street, Lafayette

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Sec-Treas: Dr. A. A. Bullock, Jr., North Louisiana Clinic, 1130 Louisiana Avenue, Shreveport

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President: Dr. O. L. Tugwell, Bastrop
Sec-Treas: Dr. Doyle Hamilton, Monroe

SIXTH DISTRICT MEDICAL SOCIETY
Inactive

SEVENTH DISTRICT MEDICAL SOCIETY
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Sec-Treas: Dr. H. W. Richmond, Oakdale

EIGHTH DISTRICT MEDICAL SOCIETY
President: Dr. A. J. Ochsner II, 2015 Simmons Street, Alexandria
Secretary: Dr. W. R. Aderhold, 909 Sixth Street, Alexandria

HOSPITAL PARTICIPATION IN MEDICARE PROGRAM

The cost to the government for that part of the Medicare program being administered by Mutual of Omaha is running less than was agreed upon, an executive from that insurance company said in Chicago recently. John J. Wrabetz, Administrator of the Medicare Dept. for the insurance firm, addressed the annual group Insurance Forum sponsored by the Health Insurance Association of America held on February 18 at the Drake Hotel for three days.

In June 1957, Mr. Wrabetz noted, a negotiated rate of $1.43 per claim was agreed upon between the government and the insurance company. By the end of 1957, he reported, Mutual of Omaha's experience indicates that the cost to the government for providing medical care to dependents of military personnel is now less than $1.30 per claim, a saving to the government of over 10 per cent.

One of the most significant features of the Medicare program, Mr. Wrabetz observed, is the freedom given the dependent in choosing between military and civilian medical facilities for treatment. Insofar as use of civilian facilities is concerned, he added, the dependent "is given full freedom to choose any doctor or hospital who will

agree to handle them under the program."

Medicare is designed to provide not the most expensive service, nor least expensive, but good medical-hospital service, Mr. Wrabetz explained. Under the program, hospitals are reimbursed at their regular rate for semi-private facilities. In cases where hospitals have just private room accommodations available, 90 per cent of such room charges, up to $15 a day, are paid. Hospitals have been very cooperative in the administration of the Medicare program, he said.

Mutual of Omaha, which is the prime insurance company contractor for the government-sponsored program in 17 states, is carrying on a program of education among service dependents to give them an understanding of what benefits are available through Medicare, Mr. Wrabetz pointed out. The medical care program initiated by the federal government a year ago has two major categories: those eligible for civilian care; and those eligible for service care.

Only the dependent wife or spouse and unmarried children are eligible for care in civilian facilities, the speaker emphasized. He said that some hardship and ill-will has resulted because some parents of military personnel thought they were eligible for civilian hospital care under the Medicare program. However, Mr. Wrabetz said, the new dependents' identification card now in use should correct this situation.

Medicare has had considerable use in its first year and has met with quick acceptance among more than 2 million dependents of service personnel, Mr. Wrabetz indicated. He said that in the first year of operation, Mutual of Omaha handled 106,000 hospital claims with a total dollar value of over $11 million. Present indications are that claim volume should level off between 10,000 and 12,000 claims a month, he added.

The majority of claims presented, the speaker continued, have been for female dependents. Studies conducted by the Office for Dependents' Medical Care indicate that 80 per cent of the cases sampled were for treatment of women—the other 20 per cent consisting mainly of male children under 14 years of age.

Air Force dependents are giving Medicare the most usage, accounting for 40 per cent of the claims submitted nationally from December 6, 1956, to July 1, 1957. Navy dependents followed with 30 per cent, and dependents of Army personnel submitting 27 per cent of total claims. The Public Health Service accounted for 2.3 percent of the total claims submitted.

In concluding his report to the annual meeting of insurance executives, Mr. Wrabetz said that Medicare has been generally well accepted by physicians and hospitals, as well as the dependents of the uniformed services. It is helping many dependents who would otherwise have been unable to receive medical care in military hospital facilities and is reaching an ever greater number of hospitals and doctors.

The Health Insurance Association of America is a trade association of 264 insurance companies in the United States and Canada which serve the public through voluntary health insurance. Member companies account for 80% of the health insurance in force in the country written by insurance companies.

MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
Calcasieu	Fourth Tuesday every other month	Lake Charles
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Morehouse	Third Tuesday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Tangipahoa	Second and fourth Thursdays of every month	Indepencence
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

ELEVENTH ANNUAL RUDOLPH MATAS LECTURE

Dr. Michael E. DeBakey, professor and chairman of the department of surgery at Baylor University College of Medicine, will deliver the Eleventh Annual Rudolph Matas lecture, March 14, at 4 p.m. in the Hutchinson Memorial Auditorium of Tulane School of Medicine. He will

speak on "Changing Concepts in the Surgery of Aortic and Arterial Diseases."

The lecture is sponsored by the Beta Iota Chapter of Nu Sigma Nu.

Dr. DeBakey is a graduate of Tulane University and earned his medical degree at Tulane School of Medicine. He took his residency at Charity Hospital in New Orleans and was on the faculty of the department of Surgery at Tulane. He was associate professor of surgery at the time he left to become chairman of surgery at Baylor in 1948.

AMERICAN COLLEGE OF CHEST PHYSICIANS

April 12—Baton Rouge

The Louisiana Chapter of the American College of Chest Physicians will hold its semi-annual (spring) meeting on April 12, 1958 at the Belmont Motel, Baton Rouge, Louisiana.

The scientific program is as follows:

April 12, 1958

2:00 p.m.

PANEL I

"The Diagnosis and Management of Congenital Heart Disease"

Moderator: Dr. Richard Fowler, New Orleans, Louisiana

Panelists: Dr. John Stotler, Baton Rouge, Louisiana
Dr. Page Acree, Baton Rouge, Louisiana
Dr. David Van Gelder, Baton Rouge, Louisiana

3:00 p.m.

PANEL II

"Obstructive Diseases of the Esophagus"

Moderator: Dr. Charles Beskin, Baton Rouge, Louisiana

Panelists: Dr. Dennis Rosenberg, New Orleans, Louisiana
Dr. Louis Ochs, New Orleans, Louisiana
Dr. R. C. Boyer, Baton Rouge, Louisiana

4:00 p.m.

PANEL III

"Granulomatous Diseases of the Lung"

Moderator: Dr. Dwight Danburg, Baton Rouge, Louisiana

Panelists: Dr. Walter McCook, Shreveport, Louisiana
Dr. Albert McQuown, Baton Rouge, Louisiana
Dr. John Seabury, New Orleans, Louisiana

5:00 p.m.

Business Meeting

6:00 p.m.

"Dutch Treat" Buffet Supper

A.M.A. DRAFTS NEW GUIDE TO DEFINE FORMS OF DISABILITY

The American Medical Association announced on February 14 publication of an important new document: a guide for physicians' use in medically rating persons under disability programs.

This guide to the evaluation of permanent impairment of the extremities and back is considered so important to physicians and administrators of many organizations vitally interested in disability that it is being published as a separate 117-page edition of the February 15 issue of the Journal of the American Medical Association.

Editor Austin Smith, M.D., said that it marks the first time that the A.M.A. Journal has ever devoted a special edition to a specific subject.

SOCIAL SECURITY FOOTNOTES

In the first five months of the 85th Congress, the lawmakers introduced more than a hundred bills designed to broaden the Social Security Program in one way or another. Such open-handed proposals invariably win acclaim, and more tangible rewards at the polls, for their sponsors. But the alarming fact is that years ahead of schedule, the growth of the Old Age & Survivors Insurance Trust Fund has come to an end. At the moment it is paying out more than it is taking in. This unexpected deficit should serve as a red flag to the Treasury, the taxpayer, and all those who are looking forward one day to receiving retirement checks of their own. However generous its motives, even a federal pension fund cannot go on incurring obligations which exceed its resources.

American medicine would do well to study the plight of physicians in Britain and France before accepting financial arrangements that would make them sitting ducks for capture by Government.

"A dangerous thing about Social Security in the United States," said Ray D. Murphy, president of Equitable Society, "is that the American people have not yet come to realize that more can be given only by taking more. The nation simply does not get something for nothing in Social Security."

OASI is a system under which the active workers and their employers are contributing the taxes necessary to pay benefits to their fellow citizens on the benefit rolls. The active workers now covered under the system must look for their own old-age benefits, not in any large measure to the Trust Fund, which is only a moderate buffer fund to cover temporary excess of benefit payments over tax receipts, but mainly to the willingness of the next generation of active workers to pay the increased taxes out of which the retirement benefits will come.

Long term results of the trend toward Big Pensions and its sponsor Big Government are to be feared. Rewards by government for long

life to all the people begins a leveling or averaging process that destroys individuality and initiative. It encourages the welfare state by placing responsibility for a great portion of our people solely in the hands of government.

ANIMALS GOOD RISK AS PETS FOR CHILDREN

The joy that children receive from pets, particularly dogs and cats, far outweighs the danger incurred from bites and disease that the animals may inflict on them.

This was revealed in an article by Dr. Hugh A. Carithers, of Jacksonville, Fla., which appears in the February issue of the Journal of Diseases of Children, published by the American Medical Association.

The report noted no serious or lasting effects to 157 children who had been bitten by one of 10 species of animals during the 20-month study.

The majority of children bitten were between the ages of 2 and 10 years. "This is during the time when parental protection wanes and the adventurous spirit takes over," said Dr. Carithers. He added, "After the 10th year a child has attained considerable discretion in handling animals.

A boy's natural aggressiveness towards animals was illustrated by the fact that males held a 3 to 2 ratio over females in the number of bites.

Seasonal factors seem to have little or no importance as to when an animal might attack. No less than 4 nor more than 15 cases were recorded in any one month.

Of the various animal bites examined during the survey, the dog was the most frequent offender. "To his credit, however, it should be pointed out that the child was usually at fault," Dr. Carithers said.

PREMATURE GRAY HAIR CARE HINTS LISTED

About 25 per cent of the population has premature gray hair. Some of these people, who include more men than women, conceal it, some simply live with it, and others turn it into a striking asset.

Some hints for turning it into an asset were listed in the June Today's Health, the American Medical Association's popular health magazine, by a prematurely gray author, Mrs. Ruth Boyer Scott, Washington, D. C.

Premature gray hair presents a few gray hairs in infancy or childhood, the hair is noticeably gray in the twenties and snowy by 35 or 40, Mrs. Scott said. Normal graying begins with a few gray hairs around 35 and probably never reaches the snowy stage naturally. The term "gray hair" is not literally true, she said. Most gray hair gets its gray effect from a mixture of normally colored hair and a growing number of white hairs.

"No preventive for gray hair, other than choosing your ancestors carefully, is known today," she said. Neither is there any cure. However, Mrs. Scott recommended some ways of handling gray hair.

WOMAN'S AUXILIARY TO THE LOUISIANA STATE MEDICAL SOCIETY

ORLEANS PARISH

If during the past two months you have heard high school girls and boys "talking essay," chances are it was the essay being sponsored by the Woman's Auxiliary to the Orleans Parish Medical Society. This year there was a choice of topics: "The Advantages of the American Free Enterprise System" or "The Advantages of Private Medical Care".

The contest conducted on a national level and sponsored annually by the Association of American Physicians and Surgeons and locally by the Medical Auxiliary closed February 25.

The Essay Contest is one of the 'pet projects' of Mrs. Eugene H. Countiss, president of the Woman's Auxiliary to the Orleans Parish Medical Society, and she appointed Mrs. Nicholas Chetta, Chairman, and Mrs. Phillip B. Johnson, co-chairman.

Mrs. Chetta announced that the following schools had participated and were sponsored by the members of the Auxiliary:

Annunciation High, Mrs. I. Medina, Jr.; Benjamin Franklin, Mrs. Edwin R. Guidry; Behrman, Mrs. John Tanner; Cor Jesu, Mrs. Rafael C. Sanchez; De La Salle, Mrs. Branch J. Aymond; Dominican, Mrs. Lawrence D. Kavanagh; Fortier, Mrs. Monte Meyer; Holy Angels Academy, Mrs. Ashton Thomas; Holy Cross, Mrs. Percy Phillips; Holy Name, Mrs. Nathan Gisclair; Jesuit High, Mrs. Byron J. Casey, Jr.; McGehee, Mrs. Eugene H. Countiss; John McDonogh High, Mrs. Joseph V. Gregoratti; Mt. Carmel, Mrs. Robert Rougelot, Jr.; Newman, Mrs. Robert C. Kelleher; Nicholls, Mrs. Nicholas Chetta; New Orleans Academy, Mrs. O. L. Pollingue; Redemptorist, Mrs. Joseph Hountha; Rugby Academy, Mrs. Nicholas C. Montalbano; Sacred Heart Academy, Mrs. J. Brown Larose, Jr.; Sacred Heart High, Mrs. John DiLeo; St. Joseph Academy, Mrs. James L. Treadway; St. Joseph High, Mrs. Edwin R. Guidry; St. Stephens Girls School, Mrs. I. Medina, Jr.; Ursuline Academy, Mrs. Nicholas Chetta; Warren Easton, Mrs. Edwin R. Guidry.

The essays will be read and judged in March

and the awards presented the winners at the April meeting of the Medical Auxiliary at the Orleans Club. The winners in New Orleans will have an opportunity to compete in the state contest and the three top essays from the state go to National.

Mrs. Branch J. Aymond,
Chairman of Publicity.

BOOK REVIEWS

Diseases of the Chest; by H. Corvin Hinshaw, M.D. and L. Henry Garland, M.B., Philadelphia, Pa., 1956, Pp. 727, illus. 634, $15.00.

This work furnishes an extensive and well-organized presentation of the current position in the field of chest diseases. The recent advances and older knowledge are presented in proper perspective. The section on tuberculosis is actually a modern monograph; at least 141 pages are devoted to this important disease. The chapters are all of high quality: some are particularly fine. It would be difficult to find discussions of tuberculosis, coccidioidomycosis and pulmonary emphysema which match those in this book.

The material is presented in standard fashion. General diagnostic, anatomical and physiological principles are discussed before the individual diseases are described. The important diagnostic methods are given in detail. The value of radiography is fully emphasized and typical x-ray films are included in all of the chapters. The films demonstrated can easily serve as a practical radiographic atlas of chest diseases.

The author has combined their clinical, bacteriological and radiological skills to create a fine modern single volume textbook of thoracic diseases. It will be of great service to students of medicine and general physicians. The specialist in chest diseases will also welcome this excellent summary of his specialty.

MORTON M. ZISKIND, M. D.

New Bases of Electrocardiography; by Demetrio Sodi-Pallares and Royall M. Calder, St. Louis, Missouri, C. V. Mosby Company, 1956, pp. 727, $18.50.

Dr. Demetrio Sodi-Pallares, the Chief of the department of electrocardiography at the National Institute of Cardiology of Mexico needs no introduction to cardiologists of this country, as many of his original publications have appeared in the American Heart Journal. The present book in English represents a translation and to some extent a revision of the third Spanish edition of his highly regarded "Nuevas Bases de la Electrocardiografia." Hence the somewhat unusual but nonetheless very appropriate English title. The translation has been ably edited by Dr. Royall M. Calder of San Antonio, Texas.

With the wealth of electrocardiographic texts available in English one might express surprise that the effort has been made to translate and publish still another. Those familiar with the third Spanish edition know why the effort was made. To quote the words of Chavez in the Foreword: "The clinician has available for learning diagnostic electrocardiography, many books, large and small, . . . but books that teach and discuss the scientific bases on which the procedure rests, or all the experimental work that has been done to elaborate it, are very few. Such a book is what Dr. Sodi-Pallares gives us here."

It is a volume of 727 pages including the index, a bibliography of 960 references and a 70-page appendix of mathematical derivations and theorems of importance for a fundamental understanding of the subject. The text proper is divided into eleven chapters, three of them dealing with the principles of electricity, electrophysiology and injured muscle. One chapter is a notably complete account of the activation process of the human heart and the final three chapters are devoted to vectorcardiography, the ventricular gradient and the intracavitary potential. The chapter on precordial leads of 141 pages treats the clinically important matters of ventricular hypertrophy, bundle branch block and myocardial infarction in an admirable manner. One notes in this chapter perhaps better than elsewhere the nice balance between the largely Wilsonian precepts of rational electrocardiography and the more empirical approach of systematic clinicopathologic correlation. In both these approaches the school of Sodi has made significant contributions.

This book is warmly recommended to all those who are "concerned with the 'how's' and 'wherefore's' in electrocardiography."

E. B. FERGUSON, JR., M. D.

PUBLICATIONS RECEIVED

Grune & Stratton, N. Y.: The Functional Organization of the Diencephalon, by W. R. Hess, edited by John R. Hughes, M. A., Ph.D.; Noise and Your Ear (Modern Monographs in Industrial Medicine), by Aram Glorig, Jr., M. D., Editor-in-Chief, Anthony J. Lanza, M. D.

Philosophical Library, N. Y.: The Neuroses and Their Treatment, edited by Edward Podolsky, M. D.; Physical Methods in Physiology, by W. T. Catton, M. Sc.

Charles C Thomas, Publisher, Springfield, Ill.: The Chemistry of Blood Coagulation, by Paul Morawitz and translated by Robert C. Hartmann, M. D., and Paul F. Guenther, M.A., Ph.D.